STWE REVIEW

APRIL 1960

Volume 7 Number 2

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DATA PROCESSING TECHNIQUES FOR PARTS CATALOGING
by P. F. Santarelli and R. F. Cunningham 4

HOW TO IMPROVE GOVERNMENT PUBLICATIONS
by Michael J. Walker 8

PHYSIOLOGICAL APPROACH TO TECHNICAL MANUALS
by G. Thomas Chambers 15

STWE-TPS CONVENTION — 1960 19

THE TECHNICAL WRITER'S ROLE IN ADVERTISING AND PUBLIC RELATIONS
by John B. Bennet 23

A WORD TO THE WISE
by Laurence V. Nelson 26

A WRITER'S COOKBOOK
by R. M. Reid, Jr. 29

BOOKS 34

LETTERS 2

NEWS AND REVIEWS 13

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A NOTE TO CONTRIBUTORS

Contributions to the *Review* are always welcome; short articles of 500 to 1000 words are most easily fitted into our small magazine.

Send the original on heavy white bond paper, typewritten, double or triple spaced, plus two carbons. Leave at least a 1-inch margin on all sides, number the pages consecutively, and be sure that all illustrations are keyed to the text.

Articles should not exceed 2500 words plus three illustrations.

We assume that every article is approved by your company before it is submitted. The authors' names and affiliations should be on the manuscript. A short biographical note is most helpful. This note should include the present title of the author, the full name of his organization, and complete information about books, other articles, or any other publication credits. Please address all contributions to the Editor; the Review Committee will read your article and our publication plans will depend on their collective judgment.

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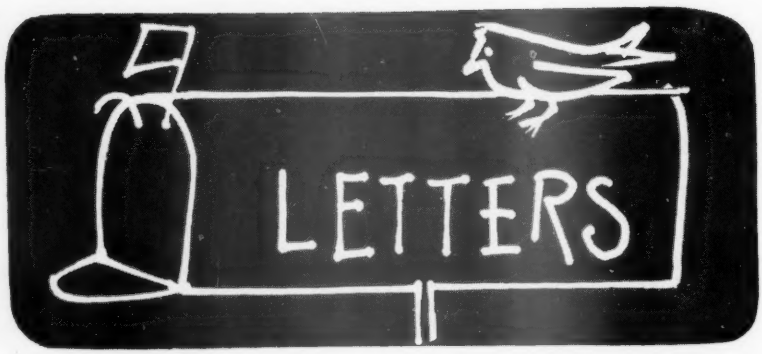
ADVERTISING INFORMATION

Advertising rate sheets are available from Advertising Manager Kenneth G. Tong, High Voltage Engineering Corporation, Burlington, Massachusetts. Deadlines for the receipt of advertising copy (photo-offset reproducible) are November 20, February 20, May 20, and August 20.

REPRINTS

Reprints are available, in quantities of 100 or more, from the John S. Swift Company, 2524 Spring Grove Avenue, Cincinnati 14.



To Editor, *STWE Review:*

Frank R. Smith's article on "The Future of the STWE Review" in the January 1960 issue has finally prompted me to write concerning the *STWE Review*. I believe you have accumulated articles of lasting interest and information in the technical writing and editing and related fields. It must be realized that the literature of a new professional field will not be compiled and published in comprehensive form in a year or two and certainly not in one or two issues of the *Review*. In other words, congratulations on the job you and the Editorial Board are already doing.

Since the above pat-on-the-back does not alleviate your problem in the slightest, may I suggest one or two articles that would be of interest to me. I cannot say that such articles would necessarily be of wide interest, but this will always be true. Because of my work (Chief of Reports for Thiokol Chemical Corporation's Redstone Division) and its connection with SPIA, I would like to see someone write a comprehensive summary of the organization and functions of SPIA. Nearly every Government contractor has its classified mailing lists determined with SPIA, receives and prepares papers for presentation at its seminars, is aware of its panels on abbreviations and standard terms, etc., but I cannot find a good description of what the organization is or what it specifically does. As a second article (or series of articles) I should like to see more concerning the management of a report-graphic arts organization: selection of employees, comparative salaries, procedures for processing numerous publications simultaneously, quality control of reproduction.

Nearly every STWE chapter has monthly meetings highlighted by a speaker of at least local authority. Judging by our programs, some are poor, some excellent. Request that each chapter president make a continuing effort to have the best of his speakers put their talks into writing for submission to the *Review*. Surely one good article from each chapter per year will add tremendously to the editorial material you may choose from.

J. D. Nilsson
Vice President Huntsville Chapter
Huntsville, Alabama

To Editor, *STWE Review:*

The term "technical communications" refers to "getting the idea across." It consists of two basic problems: (1) the *physical* problem of acquainting a worker in one location of the work of another worker in another location and (2) the *educational* problem of making the work of the latter understandable to the former. Much effort is being devoted to the physical problem, but very little to the education problem.

The channels of communication have been expanded so greatly by publishers, technical societies, and public-relations and advertising firms that no technical development, however minor, remains unknown for days, if not hours. Dozens of trade journals, house organs, and company-routed publications flow across the engineer's desk every day. The sheer mass of news is such that he cannot hope to even scan more than a fraction of the material.

Thus the problem of abstracting and indexing published technical material has burst upon the technical community, and activity is increasing in machine indexing, machine abstracting, character recognition, machine search, etc. One phase of this activity is centered about the Center for Documentation & Communication Research, School of Library Science, Western Reserve University, Cleveland, where projects include:

Preparation of abstracts or glossaries
Encoding of abstracts or original material
Machine search of abstracts
Machine recognition of words

Each of these activities also is underway on many fronts. For example, en-

(Continued on Page 38)

WELCOME TO CHICAGO!

The Chicago Chapter as Host Chapter for the Seventh Annual National Convention of the Society of Technical Writers welcomes all members and guests to Chicago. We are especially happy to welcome the Technical Publishing Society to our first joint convention.

First, I want to compliment the Convention Committee. Ed Rabin and his subcommittee chairmen have worked diligently for a year organizing and planning the convention. Each subcommittee has been active in overall planning and has assisted the others.

The Convention Committee has functioned as follows: Chairman - Edward E. Rabin, Vice-chairman - Richard D. McCormick, Exhibition Manager - Felix S. Anderson, Finance Chairman - Leo Dolkart, Hospitality Co-chairmen - Ernestine and Rosalie E. Kohn, Publicity Chairman - Robert F. Ellis, Program Liaison Chairman - Wesley W. Ballard, and Registration Co-Chairman - Herman Samet and Mary Wrenn.

Chicago's central location is a definite asset.

The Drake Hotel is world famous. Its location, on Lake Michigan at Oak Street Beach between the Outer Drive and Upper Michigan Avenue, is convenient to all transportation. The facilities at the Drake are excellent. The luxurious personal service provided by the Drake is well known, and very pleasant accommodations are assured. The exhibit, meeting, and group dining areas are attractively decorated and conveniently grouped in one wing of the hotel. All services are provided. The Drake is part of the "Magnificent Mile" — North Michigan Avenue with its shops, restaurants, and clubs.

A short walk takes you to several downtown university campuses or to the lakefront with its beaches and numerous parks.

Acceptance and interest in convention exhibits are excellent. Everyone will find new processes, equipment, and ideas well demonstrated and attractively illustrated.

The Program is the highlight of the convention. Writing, editing, illustration, production, and associated fields are all covered. Each phase of the program is staffed by speakers and panelists who are recognized leaders in their particular fields.

Many of you may be staying over for the week-end. There are unlimited attractions including baseball, the theater, and many museums. The Art Institute, Chicago Historical Society, Planetarium, and the Museum of Natural History are all nearby.

Use the Advance Registration Blank in this issue. See you at the Drake April 21 and 22!

Elizabeth S. Kolpack
Chairman, Chicago Chapter

Data Processing Techniques For Parts Cataloging*

P. F. Santarelli and R. F. Cunningham

One of the more costly projects the contractor assumes when he undertakes a military contract is the compilation of the parts catalog. With jobs of great complexity, such as the production of a weapons system, the parts catalog is one of the most expensive items in the manuals portion of the contract. Carefully defined in scope by specification, the catalog must cover the entire system down to the smallest detail part. Accuracy is essential; format and style deviations, unless approved, can result in document rejection.

Because of the over-all demands of modern technology, the average cataloging project has increased greatly over similar commitments of 15 years ago. In 1954, the military engineering facility of IBM (now Federal Systems Division) was confronted with such a project; they had to supply the Air Force with an illustrated parts breakdown for the SAGE computer.

The following description places the size of this cataloging project in the proper perspective. The SAGE computer is housed in a four-story building, 150 feet square (Figure 1). The power plant necesssary for computer operation could supply power to a town of 15,000 people. The amount of heat generated during operation could comfortably heat 45 homes during 20°F below zero weather. Two 400-ton air conditioning units are needed to cool the equipment. The SAGE computer utilizes nearly 920 miles of external wiring, 123 miles of internal wiring, and includes millions of parts.

The size and tight delivery schedule of this documenting task dictated the development of new production techniques which led eventually to the application of automatic data processing techniques.

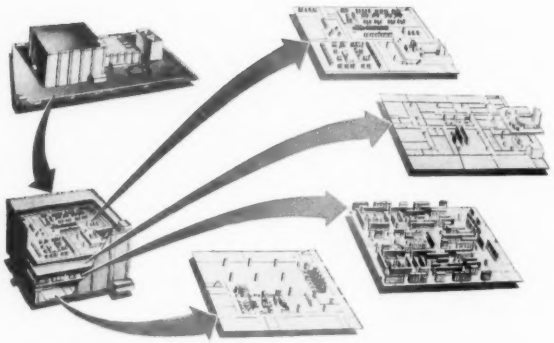


Figure 1 — SAGE Computer Installation

TYPES OF CATALOGS

Parts catalogs are divided into two general categories: the provisioning parts breakdown (PPB) and the illustrated parts breakdown (IPB). Both lend themselves to data processing techniques. The IPB is the more intricate and expensive document to prepare. All items necessary to support the contractor's system must be listed and illustrated. The IPB is used for requisitioning, storing, issuing, and identifying parts. The purpose of this article is to describe the data processing techniques as applied to the preparation of the IPB for the SAGE computer and current projects.

A group assembly parts list (GAPL) art page and tabulated listing for an IPB are shown in Figure 2. The listing is divided into five columns: (1) the list and index number, (2) the part number, (3) the description, (4) the number of units per assembly, and (5) the "usable-on code" governing part usage. The first

*Adapted from a paper presented by the authors at the 1958 Technical Writers' Institute, Rensselaer Polytechnic Institute, Troy, New York.

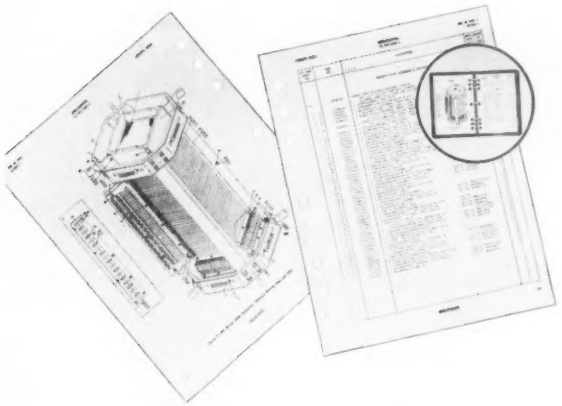


Figure 2 — Typical GAPL Pages

column contains the number assigned to the list, separated by a hyphen from the index numbers assigned to identify items in the associated illustration. The list and index numbers are assigned consecutively, beginning with 1, in each section and list, respectively. The second column contains the procurement part number for the index number entry. A brief description of the part is entered in the third column. The quantity of the part used in one assembly is entered in the fourth column. The last column contains a code that denotes the applicability of the index number entry to a specific production level of the over-all assembly.

Usually, the GAPL is hand-compiled from the manufacturer's bills of material, detail and assembly prints, wiring charts, and contractor design specifications. These listings are handwritten, rough-typed, edited, and reviewed. From the edited and reviewed listings, reproducible copy is typed, varityped, linotyped, or typeset. After the reproducible copy is prepared, it is processed for offset reproduction. Data processing techniques are superior to this manual compilation and checking because they reduce the margin of error, speed compilation, and reduce the cost of preparation.

FUNDAMENTAL MEDIUM EMPLOYED

A punched card is the fundamental medium utilized in the data processing technique. This card, in conjunction with data processing equipment, is used to eliminate many of the manual operations prevalent in IPB production. Alpha-numerical data are entered in specific locations on the card by means of a punched code. This code is identified and interpreted by machine. Figure 3 shows a handwritten GAPL form, the transition into punched cards, and their subsequent transition into a tabulated list.

Basically, two types of cards are required: GAPL cards and master description cards. The GAPL cards are a combination of header cards and supplement cards.

The header card is the first card of any one index number entry and contains the sequence number, list number, index number, part number, section number, units per assembly, attaching part code, usable-on code, action code (**A**dd, **C**hange, **D**elete, **R**emove), and an indenture code. The description field of the header card is left blank when a part number is available for the part number field; the description field is filled in when no part number is available, i.e., "COML" entries.

The supplement card contains information pertinent to a part at a particular index number location (i.e., references to higher assemblies and illustrations, and definitive information), sequence number, indenture code, and action code. It also repeats the list, index, and section numbers from the associated header card.

The master description card has the part number, part description, and any applicable AN, JAN, or vendor part numbers punched into it. This card is punched and maintained to standardize descriptions and to eliminate the repetitive task of writing the same description each time a particular part appears.

PROCESSING EQUIPMENT

The data processing equipment shown in Figure 4 is used to prepare the parts list. The 024 Card Punch is a desk-type manually operated machine with a portable typewriter - like keyboard unit. It is used to code-punch the card. Simultaneously, the alphabetical and numerical translation of this punched code is printed across the top of the card. The 056 Verifier, similar in appearance to the card punch, is the "proof-reader"; that is, the code, previously punched on the 024, is verified from the same source data. A discrepancy is indicated by a signal light and machine stoppage. The card is notched at the top, indicating the column affected, and is returned to the card punch operator for correction. The 020 Sorter is utilized to arrange the punched cards in a prescribed sequence in accordance with information punched in them. The

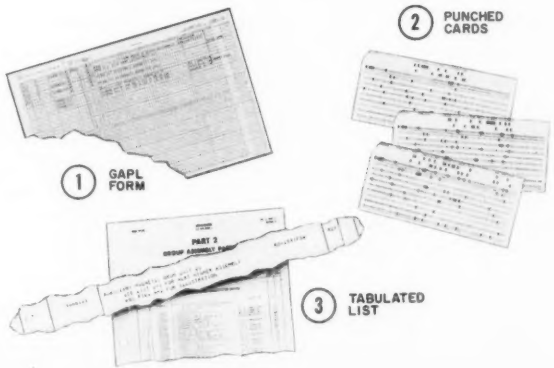


Figure 3 — Punched Card Transition

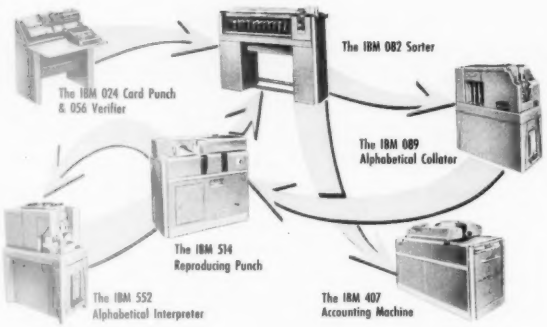


Figure 4 — Processing Equipment Employed

089 Alphabetical Collator merges (combines) two separate punched card decks, each arranged in a given sequence, into one sequenced deck of a prescribed order. The machine is also used to extract certain cards or to match cards in one deck with like cards in another deck. Duplication (reproduction) of a punched card deck, or a portion of the information contained therein, is accomplished on the 514 Reproducing Punch. The 552 Alphabetical Interpreter prints across the top of the card the punched code translation for cards reproduced on the 514. The 407 Accounting Machine interprets punched cards and prints the information in the cards on a tabular paper form in a prescribed format.

DETAILED PROCEDURE

The first detail operation in the automated procedure is, as in the manual procedure, performed manually. Source data are transferred from bills of material, assembly design specifications, prints, etc., to a GAPL form (Figure 5, step A). This information is then punched and verified on a card punch and verifier (step B). Verification assures the operator that the proper information has been punched into the cards. As a result of this operation, the two basic cards are produced: GAPL cards (header and supplement) and master description cards.

The GAPL header and GAPL supplement cards are then separated on a card sorter (Figure 5, step C). The header card deck and the master description card deck are each sorted by part number.

The master description and header card decks are then processed on an alphabetical collator (Figure 6, step D). The collator compares the part numbers of both decks and match-merges the GAPL header and master description cards. The master description card is placed in front of the corresponding GAPL header card. These cards are then placed in a reproducing punch (step E), and the descriptive data in the master description card are gang-punched into the corresponding GAPL header card(s). These cards are again sorted (Figure 7, step F) to again separate the master description cards from the GAPL header cards.

The header cards are then run through an alphabetical interpreter (step G), which prints the information across the top of the GAPL header card.

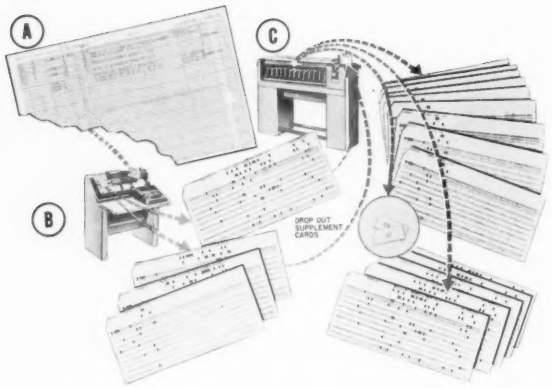


Figure 5 — Punch and First-Sorting Procedure

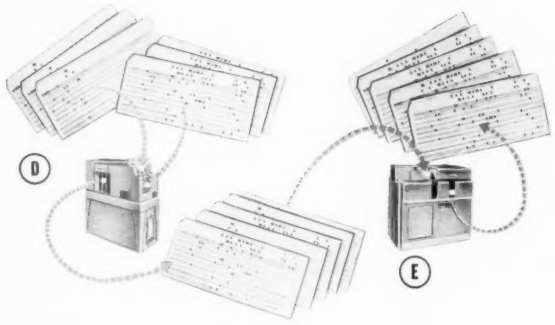


Figure 6 — Match-Merge and Gang-Punch Procedure

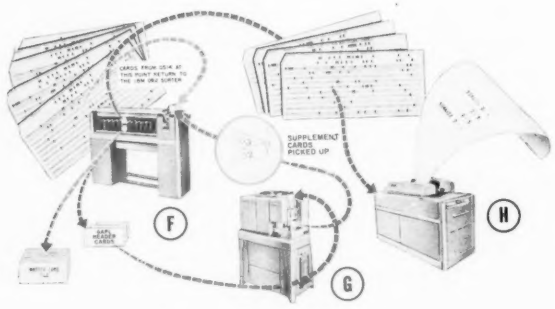


Figure 7 — Interpreting, Second-Sorting, and Tabulating Procedure

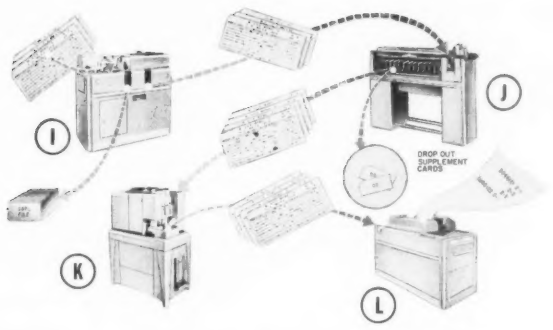


Figure 8 — Numerical Reproducing, Sorting, and Tabulating Procedure

The supplement cards again enter the process at this time. These cards are combined with their associated header cards on a sorter (step F) in section, sequence, list, and index number order. The cards are now ready for tabulation of a parts list.

A line printer (step H) is used for this process. Functioning at 150 lines or 18,000 characters a minute the line printer prints out the GAPL pages in accordance with a programmed format.

With the completion of the GAPL, the GAPL cards are reproduced on a reproducing punch (Figure 8, step I) prior to the preparation of the numerical index. The original GAPL cards are filed for future reference and revisions. The reproduced GAPL cards are sorted (step J) to separate the supplement cards from the header cards. The GAPL header cards are then sorted in numerical sequence, interpreted (step K), and tabulated (step L) on the line printer.

The final reproducible copy is made up in one of two ways. The final tabulated lists are dummied in much the same manner as typeset galleys. The running heads and feet are typeset and placed on each page. An acetate overlay of the standard GAPL form is placed over each tabulated list page, completing the page format. Offset negatives are then made of the completed page.

The second method also utilizes a dummy layout of the final tabulated list. Control cards are placed, as determined by the dummy page layout, in the GAPL punched card deck. These cards control printer spacing for illustrations and list pages. Reproducible copy is then run on a preprinted page form on which the running heads and feet are symmetrical; that is, the information that appears on the left margin of the page also appears on the right margin. Page numbers are also provided by the printer. Right- or left-hand pages are produced by blocking out the information that is not applicable.

CONCLUSION

The advantages gained through the use of automatic data processing in compiling a parts catalog are typical of the advantages gained in any data processing method. The listings are reproduced with complete accuracy and are consistent. Many of the errors that appear in hand-compiled copy do not appear in copy prepared by data processing methods. Accuracy checks are possible, e.g., the "built-in" data verifying functions in the machines. A preliminary listing can be easily printed for review purposes. Review corrections can be incorporated easily at any point in the process merely by punching a correction card. The entire compilation process is faster; considerable money can be saved through better-planned labor application.

Secondary advantages are realized because of the relative ease with which revisions can be made through the use of punched cards. Once the IPB has been compiled, the cards can be used for various purposes. For example, standard nomenclature and AN, JAN, or vendor listings can be prepared easily, and the information in the punched cards can be transmitted rapidly and accurately to remotely located facilities. The punched information can be transferred to tape by machine, transmitted by wire, received on tape, and then converted back to cards at the receiving end. The punched cards have the advantages of ease of portability, and convenient sorting, reproduction, and storage.

Of all the methods of compilation, data processing techniques directly and indirectly offer the greatest rewards of standardization. A common ground in analysis, presentation, and method of implementation is available, along with considerable economies for the various government agencies and industries involved. Ω

About the Authors . . .

P. F. SANTARELLI *and* R. F. CUNNINGHAM *are publications engineers assigned to the Technical Publications Group, IBM Federal Systems Division, Kingston, New York. Mr. Santarelli is a technical writer and has been engaged in such work for seven years. Mr. Cunningham is a writer and engineering parts analyst with 10 years of experience in this field.*

Mr. Santarelli became affiliated with IBM in 1955 and Mr. Cunningham joined the firm in 1956. They were assigned the responsibility for the preparation and publication of an illustrated parts catalog for the SAGE computing system.

Mr. Santarelli attended Bethany College, Bethany, West Virginia. He is a member of STWE and prior to joining IBM was employed as a technical author by Kaman Aircraft. Mr. Cunningham is a member of STWE and an experienced technical illustrator. Before joining IBM he was employed by Cushing and Nevell.

How To Improve Government Publications

Michael J. Walker

People have often complained about the obscurity of public printed matter. Public printed matter has been labeled "federalese" and "gobbledygook" (the British call theirs "Whitehallese"). Despite the complaints, apparently no one has adequately analyzed public printed matter to find the cause of the obscurity. This article presents such an analysis — by no means the last word on the subject, but certainly a step in the right direction.

Public printed matter has two aspects: a writing style and a printing style. We must first determine which of these two aspects is the cause of the obscurity. We must also determine whether public printed matter is being improved and what hurdles stand in the way of improvement.

THREE WRITING STYLES

All three branches of the Federal Government issue public printed matter. It includes three basic kinds: official, intended for lawyers; technical, intended for scientists or technicians; and popular, intended for the general public.

The judicial and legislative branches write about many subjects, primarily in official or legal accounts. Merely a small part of the total public printed matter, these accounts include judicial rulings and congressional proceedings, laws, and reports of investigations. Supreme Court matter appears as separate items and in the periodically bound volumes *U. S. Reports*. The congressional matter appears as separate items, in the *Congressional Record* and the *Senate and House Journals*, and in the periodically bound volumes *Statutes at Large*.

These two branches make little attempt to clarify further or popularize. Instead, they rely heavily on commercial sources such as television and radio stations, papers, magazines, and book publishers and on the schools. Writers for these media do a commendable job of making this official matter more understandable to the general public.

Public printed matter of the executive branch differs considerably. Subject matter is written from a variety of points of view. Coverage by the various news services is spotty. Besides conducting press-radio-television relations, giving talks, writing letters, and creating motion pictures and exhibits, the executive branch publishes all three kinds of accounts of Government activities. These accounts comprise the bulk of public printed matter.

Executive technical accounts are sometimes published once: Bureau of Budget's *Budget of the U. S. Government*. Some are published over and over with revisions: General Services Administration's *U. S. Government Organization Manual, 1959-60*. Some are published as handbooks: Department of Army's *Survival*. Some are published as textbooks: Navy Department's *Blueprint Reading and Sketching*. Some are published as parts of a series: National Science Foundation's *Scientific Information Activities of the Federal Agencies*. Some are published as magazines: Bureau of Standards, *Technical New Bulletin*. Some are published as supplements to magazines: Department of Commerce's *Business Statistics, 1959 Edition, a Supplement to the Survey of Current Business*. Some are published as newsletters: Small Business Administration's *Management Aids for Small Manufacturers*.

Executive popular accounts are sometimes published as leaflets: Department of Labor's *What Your Employment Service Is Doing About Older Workers*. Some are published as pamphlets: Department of Interior's *The National Park Story in Pictures*. Some are published as magazines: Department of Air Force's *Airmen*. Some are published as yearbooks: Department of Agriculture's *Water*. Some are published as annual reports.

Executive official accounts include orders of the President, treaties of the Department of State, regulations and notices of the regulatory agencies and of the

other executive agencies, and notices of patents. These materials are issued in series publications, in the *Federal Register,* and in the Patent Office's *Official Gazette.*

Many of these publications are announced in the Government Printing Office's *Selected List of U. S. Government Publications* — a newsletter mailed every 2 weeks free to subscribers — and in the *Monthy Catalog of U. S. Government Publications.*

CLEAR POPULAR PUBLICATIONS

Popular publications of the executive branch raise Government writing style to the height achieved by commercial publishers. These publications are very clear. Analysis reveals why: The preparers follow sound principles of writing; they use visual aids such as pictures, graphs, charts, and maps to further clarify the text; and they also consult with the Government Printing Office (GPO) or employ a designer to determine a readable style of type and format.

Executive technical accounts and the official accounts of all three branches sometimes drag Government writing style down to what is for many Americans a level of obscurity. Failure to follow sound principles of writing and failure to use visual aids sufficiently and effectively cause obscurity.

The following examples taken from recently issued public printed matter reveal how bad Federal technical and official writing sometimes is. The first is technical, part of a taxonomic description of a centipede given in the *Proceedings of the U. S. National Museum:*

> Prehensorial segment: Prosternum: Setae sparse, the majority relatively long; surface impressed with numerous microscopic pits, each with a sensory point (i.e., each resembling a sensillum basiconicum); ventrally without chitin-lines (see note 6); pleuroprosternal sutures distinct, complete; anterior margin unarmed, without plates or raised sclerotized border, the two sides apparently (but not actually) separated by a midlongitudinal short membranous strip. Prehensors: All articles with numerous sensilla basiconica; none with spinous processes, denticles, or other aramature; poison calyx within the trochanterprefemur, elongate, thick; tarsungula of normal size and configuration (as in *Kethops,* see figs. 8 and 9), evenly curved from base to tip; poison canal aperture dorsal, very long and narrow, its greatest length to width = 5:1.

This next example is official, part of a housing regulation given in the *Federal Register:*

> 242.5. Premiums where first principal payment one year or less after initial endorsement
>
> (a) *Mangement and Sales Types and Investor Sponsored Projects.* (1) If the date of the first principal payment is one year or less than one year following the date of such initial insurance endorsement, the mortgagee, upon such first principal payment date, shall pay a second premium equal to one-half of one percent of the average outstanding principal obligation of the mortgage for the following year which shall be adjusted so as to accord with such date and so that the aggregate of the first and second premiums shall equal the sum of (1) one percent per annum of the average outstanding principal obligation of the mortgage for the period from the date of initial insurance endorsement to the date of first principal payment, and (ii) one-half of one percent of the average outstanding principal obligation of the mortgage for the year following the date of the first principal payment.

Very few people understand such writing. Certainly news writers cannot understand it and cannot therefore interpret it correctly for the general public. The writing of Congress and the Supreme Court often can at least be correctly interpreted by the news writers.

Even if Government agencies issue press releases explaining what their publications are about, as the agencies now sometimes do, the publications must be written very clearly so many people will be able to understand them. They are permanent records. They may in later years be read by people with different interests.

EXAMPLES OF GOOD WRITING

Contrast such obscure writing with the following two examples taken from popular Government publications. Note that both examples are accurate and combine the clarity of commercial popular writing with the precision and some of the depth of Federal technical and official writing. Note how effectively the authors explain some vague concepts. The first example is from the Department of Agriculture's yearbook *Soil:*

> A mature seed contains a small, living quiescent plant. This miniature plant is the embryo, or germ. When conditions of temperature, moisture, and oxygen are right, the embryo starts to grow. This process, including the bursting of the seedcoat, is germination. When the embryo plant has developed enough to lead an independent life without drawing on the nourishment stored in the seed, germination is complete.

This next example is from the U.S. Children's Bureau's pamphlet *Your Child From One to Six:*

> **Why Children Are Untruthful**
>
> A child's first deliberate untruth is often caused by his fear of punishment. Asking a child, "Who did this?" or "Did you do this?" when he knows from the tone of your voice that you are upset (over the broken dish, or the picked-at frosting) can make him deny having done it even if he has.

GOVERNMENT PRINTING STYLE

Congress early recognized the importance of Government printing style. A resolution of December 1818 appointed a joint committee to consider and report whether any further provisions of law were necessary to ensure rapid, accurate, and neat printing for Congress. The key provision empowering the Public Printer to establish standards of printing style for the entire Government came later in a law of June 25, 1864, and was retained in the public printing law of January 12, 1895.

Prior to 1860 the Government contracted manuscripts to private printers for printing. Many of the printing elements were arranged according to various printers' tastes and whims. Expensive and given to delays and controversy over reports of graft, this contract system was abolished in 1860 when Congress established GPO. During the early years following, GPO personally instructed its employees about selection and arrangement of printing elements.

Gradually, the need for formal guidance — a style manual, other printing publications, and a training pro-

gram for printers — became apparent at GPO. The first edition of the *GPO Style Manual* appeared in 1894 bearing the title: *Manual of Style Governing Composition and Proof Reading in the Government Printing Office*. The Public Printer later also issued publications on syllabication, typography, design, ink, paper, presswork, and binding. He also established a printer's apprenticeship training program.

The 1894 edition of the *Style Manual* contained only 40 pages and thus amounted to little more than recognition of the usual problems encountered in a printing plant. Indeed, this edition states: "Clear and positive rules are needed in printing offices to prevent confusion and unnecessary delay and expense." Later editions were revised and enlarged successively, the latest edition issued in January 1959.

The primary purpose of the *Style Manual* is to help GPO printers select the best usage of certain linguistic elements, proper design, size and style of text and heading type, space between the lines (leading), column width, treatment of illustrations, page size, ink, paper, typesetter, printing press, and binding for public printed matter.

How the Public Printer has influenced Government publications is therefore apparent from the content of the *Style Manual* and the other GPO printing publications. Like commercial printers, the Public Printer has been concerned primarily with converting Government manuscripts into type. Public printed matter has continued to show improvement because of improvements in printing style. The Public Printer maintains standards of excellence that compare favorably with those of commercial printers.

Congress also directly influences Government printing style, as is apparent from the existing regulatory and budgetary controls. The Joint Committee on Printing of Congress is the supervisory agency over GPO. Congress's restrictions however, do not sacrifice Government printing style, and merely eliminate needlessly costly printed matter. Illustrations and color processes are restricted to functional rather than lavish use.

Incidentally, GPO officials now estimate the cost of Government printing to be $87 million annually. This amount includes the cost of all printing performed by GPO and most of the printing performed under contract by private printers. The cost of some executive-branch printing and the cost of copy preparation (that is, research, writing, editing, and review) are not included in the total.

IMPROVEMENTS IN PUBLIC PRINTED MATTER

Some Government agencies are concerned with improving public printed matter. Publications that a few executive agencies have initiated champion clear writing. A few executive agencies have occasionally called in writing consultants to help improve the writing. The Department of Defense, the Central Intelligence Agency, the Department of Agriculture, and the Internal Revenue Service, for example, hired Professor Calvin D. Linton, of George Washington University, as a consultant. Professor Linton has demonstrated that obscure Government technical and official writing can be made clearer for everyone.

Alfred Stefferud, one of the finest editors in the Federal service, has shown how obscure public printed matter can be improved. Stefferud edits the yearbooks of the Department of Agriculture. They used to be dull, ponderous, technical reading matter. They used to languish with needless obscurity. Today, through Stefferud's leadership, the books are nicely planned, written, designed, and printed popular reading matter. The 1959 yearbook *Food*, for example, could be read and enjoyed in most of the households of America.

Some executive agencies have established formal training programs for their writers. The Department of Agriculture Graduate School offers courses in writing and editing to the entire Government. Too few Government writers and editors take advantage of this opportunity to get good training and practice in writing clearly.

The Civil Service Commission is also concerned with the problem. This agency recently decided to revamp existing job descriptions and pay scales of persons recruited for Government information work. Information specialists rank beside the subject matter advisers as important Government jobs, but some information jobs call for less than standard wages.

Congress has shown some interest too. Members of Congress have from time to time spoken against the foggy style of writing. House Resolution 2165 introduced recently by Congressman Hagen aims to establish a grammar commission.

Professional societies such as the Society of Technical Writers and Editors are trying to show Government people how to improve their writing. STWE people have much to offer because they have shown how complex technical matter can be made more understandable to lay people. Too few eligible Government people belong to such societies and even fewer attend local chapter meetings.

Some executive agencies turn out excellent publications. The two whipping boys of the Government, the Department of Defense and the Department of Agriculture, often produce excellent technical publications. The National Park Service of the Department of Interior and the Children's Bureau of the Department of Health, Education, and Welfare consistently produce excellent popular publications.

A few executive agencies conduct readership surveys to determine the extent of readership and reader interests. The GPO Superintendent of Documents has

impressive-appearing statistics on the distribution of public printed matter through subscription and through sales in the GPO Book Store. Actually, only a few Government publications, such as *Infant Care* and *Your Federal Income Tax,* are read by many people. The remainder are read by only a very few people, in some instances fewer than 1000. The Government needs a nationwide audience for its publications.

One reason for the lack of readers is that the Government makes only a slight effort to advertise its publications. A more important reason is that given obscure public printed matter, fewer people will read it.

Clearer, more popular accounts of the executive agencies are, of course, actual improvements. They invite more people to read, and they are easier to read for everyone.

HURDLES TO OVERCOME

The attitudes of some responsible Government officials — administrators, writers, and editors — stand in the way of efforts aimed at improving Government publications. Some of these people have the attitude "We don't know how to produce better writing, and don't show us how." The Government also has its share of people who cannot write without using an excessive amount of technical terminology (jargon) and others who cower before or are impressed by such pedantry and pompousness.

There is a painful lack of guidance and supervision in the writing of public printed matter. No agency supervises Government writing. The Public Printer does not prescribe or alter the treatment of subject matter made by the three branches. The *GPO Style Manual* offers only a few of the more elemental, mechanical principles of writing. The various agencies of all three branches are left to their own means to rise above or fall below existing commercial printed matter. The burden of writing is sometimes placed wholly on a subject matter specialist who cannot write clearly.

Many sound principles of writing should be brought to the attention of Government writers and editors. Some of these are: Use many familiar and explanatory words. Limit the amount of jargon. Use visual aids freely and effectively to show what the jargon stands for. Use verbs in the active voice. Place modifiers properly. Limit the amount of phrases and clauses in each sentence. Use effective topic sentences. Keep paragraphs short. Arrange topic headings into a sequence. Restrict subject matter to a specific problem. Make the introduction state the problem discussed. Make the ending summarize the main points discussed. Use a short title revealing what the report is about.

These and still other sound principles of writing prescribe the selection and arrangement of linguistic elements for greater clarity. When followed, they help make writing easier to read for everyone.

Principles alone, however, are not enough. The Government needs writers and editors with imagination and ability to successfully implement the principles. Many of these principles cannot be applied mechanically. The judgments of mature writers and editors are necessary to determine when the writing is sufficiently clear.

Unfortunately, the Government does not have enough good writers and editors. Obscure public printed matter exists because certain Federal writers write it and certain Federal editors then permit it to be published. The editors fail to do what Stefferud does. They fail to make it clearer for the reader.

FAULTY THEORIES INFLUENCE WRITERS

The need for guidance and supervision in Government writing is especially great because certain faulty theories of writing current in our society are influencing Government writers and editors. These are some of the theories:

The first is the esthetic theory of writing. Some Federal writers believe in fine writing. They view the writer's style as sacred and unchangeable, and in doing so overlook the purpose of language in public printed matter. In serious nonfiction (expository writing), the kind of writing that the Government initiates, language is secondarily esthetic. Language is primarily used to convey information. Federal writers should welcome any change contributing to greater clarity. The best style is so unobtrusive the reader is never aware of the words that he reads. Only the content of the writing should come through.

The second theory is the formal theory of writing. Besides frowning on slang or vulgar words, which should be avoided, some Federal writers also frown on many desirable familiar (colloquial) words. They insist on using pompous, formal jargon. Avoiding inoffensive colloquial words is foolish. They should be used for greater clarity. We cannot write without some jargon, but we must control the amount and must explain its meaning more frequently and effectively.

The third harmful theory is the audience theory of writing. This theory is interpreted by some Federal writers to mean that they should write only for a narrow audience of a few highly specialized readers in the same field of training. The theory encourages editors to think that striving for greater clarity is unnecessary since the writing is understandable to these few specialists. The writers presume that the reader has great knowledge of subject matter and can read the writer's mind. Excessive use of jargon without explanation of meaning, broad scope or great depth without sufficient explanation in the treatment of subject matter, and complex organization result so that other readers — even very learned ones who have earned doctorate

degrees — cannot understand the subject matter being discussed.

Federal writers must focus on an audience, but it should be a wider audience. Writers and editors of textbooks and other more popular publications in and out of the Government focus on such an audience. They create writing that is clear for many people. Federal technical and official writers and editors should study and imitate such writing.

The objective of all public printed matter, not merely the popular accounts, should be to convey information to the general public so that they may know what their Government is doing.

CONCLUSION

Government writing style, not Government printing style, is the cause of obscurity in public printed matter. Complaints of the public against "federalese" and "gobbledygook" are actually directed at Government technical and official accounts, especially some of the accounts of executive agencies. Through their more popular accounts and through their clearer technical and official accounts, Government agencies have already shown that public printed matter can be improved.

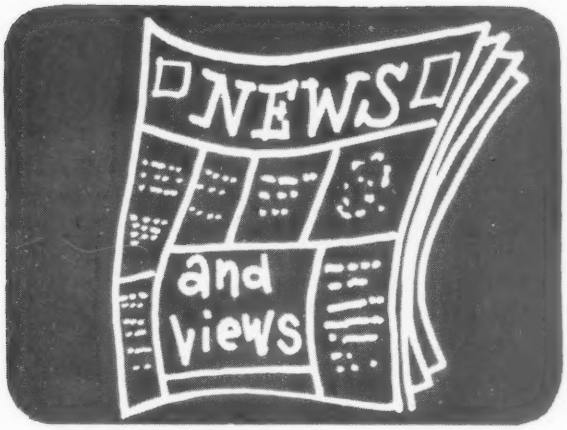
Poor attitudes and faulty writing and editing practices are the hurdles that have to be overcome before public printed matter can be improved further. The Public Printer can plug a gap by enlarging the *Style Manual* to include other sound principles of writing to guide Government writers and editors. The Civil Service Commission should establish professional standards and pay scales similar to those of private industry to attract competent writers and editors into the Federal service.

Agencies that initiate Government writing have to contribute most to this effort. They should conduct readership surveys to determine the extent of readership and reader preferences. They should educate their responsible people to the need for clearer writing. They should encourage more of their writers and editors to take advantage of training and practice available at the Department of Agriculture Graduate School. They should encourage their editors to take a more active role in planning and supervising the writing. They should encourage membership in professional societies concerned with writing and editing.

The result of these efforts should be the conversion of obscure public printed matter to clearer public printed matter. Ω

About the Author . . .

MICHAEL J. WALKER *is a publications editor for the Smithsonian Institution. He previously worked on publications for the Library of Congress and the Department of the Army, and wrote newscopy for broadcast for CBS. He recently completed a graduate program of study on planning and preparing Government publications at the Graduate School of the U. S. Department of Agriculture.*



By Cleo Gray

MIL SPECS AGAIN

Received a note from G-E editor Larry Pathe, Cincinnati, in response to the January discussion of abbreviations and Military Specifications: "MIL-M-005474B (USAF), paragraph 3.7.5.1.4, on abbreviations specifies that MIL-STD-12 shall govern the form of abbreviations when used. While MIL-STD-12A left quite a bit to the imagination in its discussion of capitalization, the most recent revision, MIL-STD-12B (18 May 1959) clarifies the situation handsomely, as follows:

> 1.2.3 LETTERING. — In text, capitalization will agree with the parent word or phrase being abbreviated. The rules of grammar concerning capitalization will be followed . . .

"In effect, this statement conforms to the rules of the American Standards Association on the subject; namely, that abbreviations shall be in lower case letters except when the word abbreviated is a proper noun. For example, Btu is used for British thermal unit.

"Now that we've gotten rid of that problem, I have one of my own. Referring to the title of MIL-STD-12B: "Abbreviations for use on Drawings and in Technical-Type Publications," how does a *technical type* publication differ from a *technical* publication? This type of padded-type verbiage is driving me almost to the limit of human-type endurance."

HOYT KEYNOTE ADDRESS AVAILABLE

Palmer Hoyt's keynote address at the Second Annual Institute in Technical and Industrial Communications at Colorado State University last July is available. It may be secured in booklet form from Dr. Herman M. Weisman, Director, Institute for Technical and Industrial Communications, Colorado State University, Fort Collins, Colorado. Mr. Hoyt is Editor and Publisher of the *Denver Post*.

COMMUNICATIONS

Rensselaer Polytechnic Institute announces the Eighth Annual Technical Writers' Institute June 13 to 17. The Institute presents lectures by speakers from industry on editing; on writing reports, manuals, and instruction books, technical promotion, articles, and government publications; on technical illustration; and on supervision of publication organizations. In addition, instruction in basic principles of technical writing and editing will be given by members of the Rensselaer staff.

The Third Medical Writers' Institute will be concurrent with the Technical Writers' Institute. Inquiries about both writers' institutes should be sent to Professor Jay R. Gould, Director, Technical Writers' Institute, Troy, New York.

The Southeastern Michigan Chapter held its Third Annual Seminar, Communications in Industry III, January 29 and 30 at Wayne State University in Detroit. Interesting subjects covering a wide range were discussed by such authoritative speakers as Ely Arlock, head of the translation activity, La Driere, Inc., and noted authority on Russian communications; Ben H. Weil, author and technical writing authority well known to STWE members; Dr. Alexander Gode, Chief of the Interlingua Division, Sciences Service; and Robert M. Boltwood, head of the Reports and Editing Department, Chrysler Corporation, Missile Division.

ARMED FORCES WRITER

Have been reading with a magnifying glass and of some interest a not-so-old issue of *Armed Forces Writer*. It contained no particular article apropos for comment in a technical writers' journal, but its ostensible purpose and presentation (apart from the magnifying-glass requirement) should interest ambitious writers with hopes of profitable returns on hours invested in free-lance writing. The small publication offers practical advice, encouragement, and a market.

Subscriptions are included with membership in the Armed Forces Writers' League, Inc., 1832 N. E. 7th Terrace, Gainesville, Florida; and almost anyone may join.

BUREAU OF STANDARDS UNIT PREFIXES

The National Bureau of Standards has adopted new prefixes recommended by the International Committee on Weights and Measures for multiples and submultiples of units. The Committee expanded the familiar list of eight numerical prefixes to a total of 12, with corresponding symbols, as shown in the table below. A capacitor with a capacitance formerly expressed as 5 micro-microfarads (5×10^{-12}) will be 5 picofarads, abbreviated 5 pf. Asterisks indicate newly added prefixes.

Multiple or Submultiple	Prefix	Symbols
10^{12}	tera*	T
10^{9}	giga*	G
10^{6}	mega	M
10^{3}	kilo	k
10^{2}	hecto	h
10	deka	dk
10^{-1}	deci	d
10^{-2}	centi	c
10^{-3}	milli	m
10^{-6}	micro	μ
10^{-9}	nano*	n
10^{-12}	pico*	p

DO YOU HAVE 3 MINUTES?

If you can't afford the time for a course in technical writing, take 3 minutes for the following article. The author sets a good example by following his own advice, "Let the words be few, but the meaning clear."

A THREE-MINUTE COURSE IN REPORT WRITING

Walter Bradenburg

IBM Advanced Systems Development Division.

What Is Good Technical Writing? It is getting ideas into print. And more important, getting from print to understanding by others. Let the words be few, but the meaning clear. The form is unimportant if the reader finds what he is seeking.

Why Should You Write Well? You become more effective; you think more clearly; and the reader will respect you more. Discipline in writing leads to pleasure in reading. An instruction properly understood means a job already half done.

Who Is The Audience? Facts must be passed up the ladder—man to manager; experimenter to administrator. Volumes must be boiled down to conclusions. Information must also pass down the ladder. The manager must interpret and explain. Those working on equal planes of interest and experience want details and techniques.

How To Start. When you get facts and ideas, jot them down. Arrange them in logical order later. Then rewrite and polish. Or, outline what you want to say. Then get supporting facts.

What Vehicle to Use. Within your organization: A memorandum report to get the word around fast. A technical report for formal or detailed studies.

For the outside world: The professional paper for prestige and advancement of human knowledge. The trade magazine article to help other specialists with new materials and methods.

Be Sure It's Readable. Keep sentence structure simple . . . Make every word count . . . Be accurate in your choice of words . . . Vary the pace . . . Write to express, not impress . . .

The Parts of a Report. *Title:* Convey the main idea with a few well chosen words. Put yourself in the position of the reader. It should stir his interest. And it should fit the subject.

Abstract: The most widely read portion of a report. Give enough facts to let the reader decide if the report contains what he is looking for. One page is the usual limit. The abstract must be able to stand alone because it often circulates apart from the report.

Introduction: State the problem; show the purpose of the report and the conclusions reached. Tell what problem-solving techniques were used. Brief the reader so he will know what to expect. You might call it the warm-up before the pitch. One page should do it.

Body: The detailed how, when, where, why, what, and who. Describe your ideas, methods, and materials in a logical order. Arrange them according to time order or physical structure of the subject as the situation demands. Use pictures to clarify difficult ideas or complex structures. Graphs and tables should sum up masses of data or should show trends. Be accurate and separate facts from opinions. Prefer the specific to the general. Avoid such words as few, many, some, slight.

References: A list of sources you quoted from.

Bibliography: The sources you used to get your facts. Works that will further help the reader.

Acknowledgments: We all owe a debt to those who have gone before—Einstein, Newton, Galileo, DaVinci . . . Give credit to those who have helped you. Let the Golden Rule be your guide.

Appendix: The place for material that adds weight to your argument. Don't just add weight to the report.

When You Sit Down to Write. Break up the flow of words into bite-sized paragraphs . . . Identify the major points with proper headings . . . Watch out for excessive jargon and abbreviations . . . Follow a logical outline . . . Ruthlessly cut out idle words . . . Watch your grammar, spelling, and punctuation. . . Rewrite to get rid of rough spots.

When You Have Finished. Get several associates to read the report. Let your boss read it. Then try it on a technical editor if one is available.

What Are You Waiting For? Sit right down and start the report you've been meaning to write. Ω

Physiological Approach to Technical Manuals

G. Thomas Chambers

The launch area technical manuals for the Mace surface-to-surface missile were already under development in 1958 when a major change in their philosophy was decided upon. This change was a result of several factors, one of which was the STWE Sixth Annual Convention. At a panel discussion during the convention, J. S. Brady, of Space Technology Laboratories, discussed the advantages of a physiological approach to technical manuals. Martin publications personnel attending the convention were impressed, and in the development of the Mace launch area manuals this physiological approach was adopted.

The physiological approach assumes that the key to effective technical manuals is an understanding of the real use to which using personnel will put the manuals. In the preparation of the Mace launch manuals, an analysis of the launch team composition, the capabilities of its personnel, and their training were considered fundamental prerequisites. The analysis of the qualitative personnel requirements was also made a regular part of the effort. Information furnished by human factors specialists was also used to determine and evaluate the desirable level of presentation. Where no personnel analysis data were available, the writer himself conducted research to determine the requirements of his audience before deciding upon a technique or level of presentation. Usability was then considered a function of selectivity, applicability, and accessibility of the manual.

For the Mace launch area manuals, the job-oriented approach was chosen (see Figure 1). This type of manual represents an approach based on selectivity and applicability of job instructions; it results in manuals sectionalized according to the function and skills of the individual.

The job-oriented manuals are identified by the applicable Air Force Specialty Code (AFSC), by the function to be performed, and by the locale in which the function is performed. Hence in his job-oriented manual, the airman specialist will find all the instructions and data required for the performance of his job, and he will find only that information. It would do

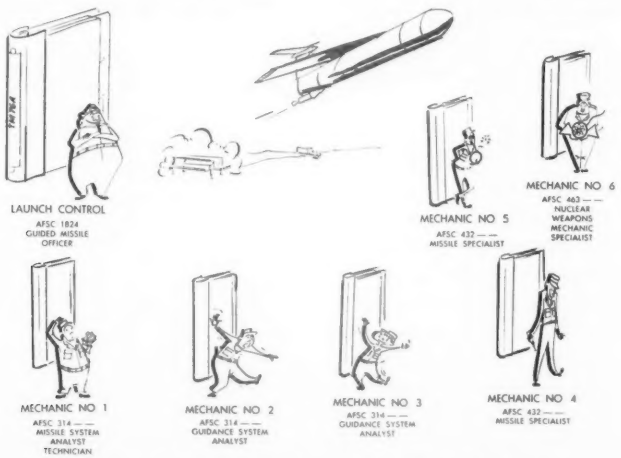


Figure 1—Launch Team for Mace Missile

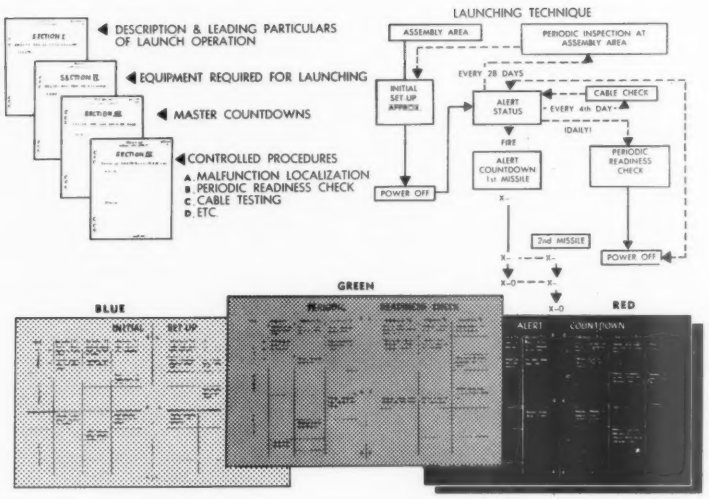


Figure 2 — Launch Control Officer's Manual

little good to provide these selective sets of job instructions if they were not readily and conveniently accessible to the user. For this reason, except for the Launch Control Officer's Manual discussed later, the job-oriented manuals are pocket sized (4 by 8 inches). These manuals were developed from the system-oriented manuals used during the research and development program of the Mace. System-oriented manuals were retained until the launch team composition became firm; this did not occur until after receipt of the first production missile..

The job-oriented manuals were prepared by actually working with the military training squadrons. To supplement this effort and to develop a fast-reaction countdown, the Martin Company formed a launch team, obtained necessary launch area equipment, and (at a field test site) set up a launch pad to develop the job-oriented alert countdown.

The Mace launch team is composed of eight members. Each of the members is supplied with an individual technical manual. These manuals contain all the instructions and data required to perform a specific job and that job only.

LAUNCH CONTROL OFFICER'S MANUAL

Unlike the manuals of the other team members, the Launch Control Officer's Manual is 8½ by 11 inches. In this case portability is not a prime consideration. The manual contains four sections: (1) Description and Leading Particulars, (2) Equipment Required, (3) Master Countdown, and (4) Controlled Procedures. (See Figure 2.)

Section I contains a general description of procedures followed from the time the missile arrives at the launch pad until it is launched. When the missile arrives on the launch pad from the assembly area, it is placed in position; an initial setup procedure is then performed. This operation consists of performing the procedures for the initial setup and alignment of equipment. Performance of alignment procedures is necessary only when the missile is positioned or moved. Other initial setup procedures to be performed include a cable test (to ensure reliability of signal paths), a self-verification (to ensure reliability of the tester), and a qualitative checkout (to ensure the proper functioning of the guidance and control systems). When the operations of the initial setup procedure have been completed, power to the missile and test equipment is turned off. If the missile remains untouched, these procedures automatically place it in an *alert status.* Upon receipt of the command to fire, the missile can be launched from this status within a short reaction time. During this time, the only major operation required is a qualitative checkout of the guidance and control systems.

FIRING OF SECOND MISSILE

It is also possible to launch a second missile within a short time after launching the first. Prior to launching of the first missile, a portion of the launch team moves to the second missile, which is also in the *alert status.* These personnel start preparing this missile for launch. After the first missile is launched, the test equipment and the remaining members of the team move to the second missile to effect the second launch. While a missile is in the *alert status,* there is a daily requirement for a readiness check. This check assures the qualitative performance of the guidance and control systems. After completion of the check, power is removed, thus placing the missile back in the *alert status.* Another requirement, which is met every fourth day, is a cable verification to ensure that the intercon-

necting cables have not developed shorts or lost continuity.

The missile may remain in this status for a specific period of time. The missile must then be returned to the recycle area for a periodic inspection as defined in the inspection manual. A new missile is then brought to the launch pad, and the sequence is repeated.

ADVANTAGES OF SYSTEM

The advantages of the proper setup and sequencing just described are quite obvious. First, through this sequencing, the launch team is able to get a missile off the ground soon after receipt of the command to fire. Second, there is increased reliability when the actual launching is conducted from the *alert status*. Studies indicate that the greater percentage of malfunctions occur during the first, and possibly the second, check-outs. Under the Mace concept, qualitative tests are performed during the initial setup as well as during the periodic readiness check. Hence, when launching is conducted from the *alert status*, reliability is at a maximum.

Section II (Equipment Required) is simply a listing of all peculiar tools and equipment necessary to set up a launch pad and conduct the launching operation. It is a planning document that provides a list to be used for cross-checking tools and equipment before a launch pad is established or put into operational readiness. If this list is followed, all tools necessary for performance of the job are available at the launch pad.

Section III (Master Countdown and Checklist) is the heart of the launch control manual; this section contains the initial setup checklist, the periodic readiness checklist, and the alert countdowns. The composition of these three documents is similiar in nature; however, the countdowns also have a time requirement. Basically, these documents form a coordinated checklist of the over-all launch pad operations. They are divided into columns — one for each member of the launch team. Horizontal lines across the checklists serve to separate operations. (An operation is defined as a group of procedures performed simultaneously by various members of the launch team.) At the end of each operation, the individual specialist must stop until all members have completed the operation; all personnel then proceed to the next operation.

TIMING OF OPERATIONS

The necessity for this procedure is demonstrated by the following example:

Operation	Guidance Operator	Munitions Specialist
Operation 1	Check out wing destruct system	Install booster rocket
Operation 2		Arm wing destruct system

TABLE 3-2
MALFUNCTION LOCALIZATION DURING MPT TEST
Section III
Test 1 of 2
(20 to 60 Min.)

TEST POSITION 7
VG. PRECESSION NOSE DOWN TEST

NO-GO CONDITION	TEST PROCEDURE	TEST CONDITION	CORRECTIVE ACTION
1. DC-2 RESPONSE indicator lamp on.	1. Check pitch follow-up voltage between TB301-4 and TB318-15 (ground) for less than 8V DC.	1. If voltage is less, perform corrective action 1.	1. Replace MPT test Programmer Unit and repeat check.
		1a. If voltage is greater, perform corrective action 1a.	1a. Check stabilizer position. If trailing edge is full up, replace Stabilizer Actuator and repeat check. If it is not perform test procedure 1a.
	1a. Check voltage between TB301-7 and TB301-6 for greater than 18V AC.	1b. If voltage is correct, perform corrective action 1b.	1b. Replace Test Control Unit and repeat check. If trouble exists return missile for BMC test.
		1c. If voltage is not correct, perform test procedure 1b.	
	1b. Check voltage between J1702 and J1703 on Test Programmer Sweep and Phase Generator Cal. switch in CAL. for between 17 and 19V AC.	1d. If voltage is correct, perform corrective action 1c.	1c. Replace Test Control Unit and repeat check.
		1e. If voltage is not correct, perform corrective action 1d.	1d. Replace Test Programmer Unit and repeat check.

HANDBOOK PROCEDURE REFERENCE FOR CORRECTIVE ACTIONS

A. Replace Test Programmer Unit (See T.O. 33D9-30-5-2-1)
B. Replace Stabilizer Actuator Assembly (See T.O. 21-TM76A-2-2)
C. Replace Test Control Unit (See T.O. 53D9-30-5-2-1)

ESTIMATED TROUBLESHOOTING TIME

A. TEST PROCEDURE 1	10 minutes
B. CORRECTIVE ACTION 1	20 minutes
C. CORRECTIVE ACTION 1a	60 minutes
D. TEST PROCEDURE 1a	10 minutes
E. CORRECTIVE ACTION 1b	30 minutes
F. TEST PROCEDURE 1b	10 minutes
G. CORRECTIVE ACTION 1c	30 minutes
H. CORRECTIVE ACTION 1d	20 minutes

Figure 3 — Example of Data Furnished Launch Control Officer

Obviously, the Munitions Specialists must not begin Operation 2 until the Guidance Operator has completed Operation 1; otherwise, the wing may be destroyed on the launch pad. The destruct system could be armed during its checkout if the Munitions Specialists completed both operations before the Guidance Operator completed the first operation.

Since the alert countdown is a "hot count" (one in which an actual launch is anticipated), time requirements are added for each operation. This forms a well-integrated checklist that permits efficient usage of manpower; maximum work is performed in minimum time.

Section IV (Controlled Procedures) provides the Launch Control Officer with information that helps him in his decision-making functions. At the present time, this section is primarily devoted to malfunction localization techniques.

From the time a malfunction occurs (a NO-GO condition), the Launch Control Officer directs the course of action to be taken. When a NO-GO occurs, the malfunction must first be localized to either the missile or the test equipment. This localization is achieved essentially through a process of elimination.

When this information has been obtained, the Launch Control Officer must make his first decision, which is based on tactical circumstances. Figure 3 illustrates the type of data given to the Launch Control Officer and upon which he bases his decisions.

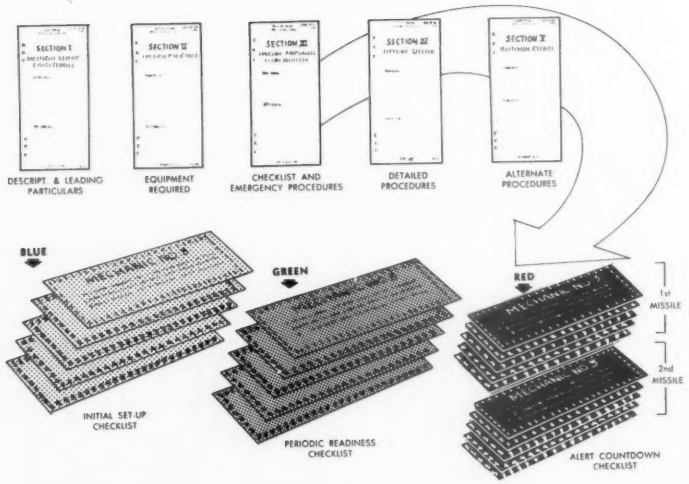


Figure 4 — Mechanics' Technical Manuals

MECHANICS' MANUAL

For each of the other mechanics, an individual pocket-size manual is supplied since portability is a prime consideration. (See Figure 4.) These manuals each consist of five sections: Section I, Description and Leading Particulars; Section II, Equipment Required; Section III, Checklist and Emergency Procedures; Section IV, Detailed Procedures; and Section V, Alternate Procedures.

Section I is very similar in content to the Launch Control Officer's Manual, with the exception that it generally describes the launching operation in relation to the duties of the specific mechanic. Section II is also similar to the Launch Control Officer's Manual, but it lists the tools and equipment required by the specific mechanic only.

Section III contains three sets of checklists. Each set is colored in accordance with the countdown in the Launch Control Officer's Manual, i.e., Initial Setup Checklist, blue; Periodic Readiness Checklist, green; and Alert Countdown Checklist, red. The checklists are actually cards which are removed from the manual while the job is being performed. There is one card for each phase in the master countdown of the Launch Control Officer's Manual. (The phases are divisible points inserted for purposes of coordination, i.e., check-out, readying for launch, and launching.) The phase number, for ease of recognition and purposes of visual control, is imprinted around the entire border of the card. The cards contain abbreviated requirements that the mechanic must meet during each phase. The necessary procedures for meeting these requirements are contained in the next section. In the Alert Countdown Checklist, there are 12 cards: six cards for the six phases involved in launching the first missile and six cards for the six phases involved in launching the second missile.

Sections IV and V contain detailed procedures for accomplishment of checklist requirements. Actually, procedures are presented in a step-by-step form, with each instruction or command a separate step. Illustrations are included throughout to supplement the text and to make the instructions more easily understandable.

Finally, these manuals are supplied in the latest type of Air Force plastic loose-leaf binder (Specification MIL-M-9843) which will tolerate an environment of from - 40 to + 140°F.

CONCLUSION

These job-oriented manuals are proving very effective. As noted earlier, the manuals are, in part, the result of an idea received during the 1958 STWE convention. The exchange of information and techniques between members of the technical writing profession, made possible by STWE, has thus proved of great practical value in the Mace launch area technical manuals. Ω

About the Author . . .

G. THOMAS CHAMBERS *is TM61/76 (Matador/Mace) Publications Project Supervisor for The Martin Company, Baltimore. He is a past president of the Baltimore Chapter, STWE and at present is the Chairman of the Mid-Atlantic Regional Technical Writing Institute at The Johns Hopkins University, Baltimore.*

Mr. Chambers joined The Martin Company in 1952 and was soon assigned to field engineering at Patrick Air Force Base, Florida. Upon reassignment to Baltimore, he entered the area of publications support for the weapon systems. Since that time he has been engaged in the preparation of Matador and Mace technical publications.

SEVENTH ANNUAL STWE CONVENTION
meeting jointly with the TECHNICAL PUBLISHING SOCIETY
APRIL 21-22, 1960 — Chicago, Illinois

The famous Drake Hotel of Chicago's Gold Coast is the setting for the 1960 combined national convention of the Society of Technical Writers and Editors and the Technical Publishing Society on April 21-22, 1960. This meeting promises to be the largest gathering yet of writers, editors, publishers, educators, illustrators, and others in related fields.

Registrants will hear an outstanding group of experts from government, industry, research laboratories, and colleges. The convention program, as announced on the following pages, includes many timely, informative, and stimulating subjects.

Keynoter at the April 21 general session will be Richard E. Horner of the National Aeronautics and Space Administration, speaking on "A Dominant Need in the Nation's Space Program — Accurate Technical Reporting."

The registration fee of $12.50 for members of STWE or TPS, or $17.50 for non-members, will include a copy of the published Proceedings containing all papers presented at the convention.

You may simplify your registration by sending in the advance registration form which is attached to this issue.

Convention registration desks at the Drake Hotel will be open during the following hours:

Wednesday, April 20: 6:00 p.m. to 10:00 p.m.
Thursday, April 21: 8:00 a.m. to 9:00 p.m.
Friday, April 22: 8:00 a.m. to 2:00 p.m.

CONVENTION PROGRAM

Thomas A. Grogan
President, STWE

Carl M. Johnson
President, TPS

THURSDAY, APRIL 21, 1960

9:00 a.m. Opening Session

Call to order by Edward E. Rabin, Convention Chairman

Invocation by the Rev. J. Donald Roll, Chairman, Department of Physics, Loyola University

Welcome by Thomas A. Grogan, President, STWE, and Carl M. Johnson, President, TPS

9:15 to 10:00 a.m. Keynote Address

"A Dominant Need in the Nation's Space Program — Accurate Technical Reporting"

Richard E. Horner, Associate Administrator, National Aeronautics and Space Administration, Washington, D.C.

10:00 to 10:30 a.m. Coffee Break

10:30 to 11:10 a.m. General Session

"The Human Factor in Communication — A Research Study" — Dr. Milton Goldstein, Dean, American Institute of Engineering and Technology, Chicago, Ill.

11:15 to 12:00 noon. General Session

"Breaking the Communications Barrier"

D. R. McDowell, Manager of Operating Services, Space Technology Laboratories, Inc., Los Angeles, Calif.

12:30 to 2:00 p.m. Luncheon

Thomas A. Grogan, President, STWE, presiding.

Speaker to be announced.

2:15 to 3:00 p.m. Concurrent General Sessions

1. "The Average Manual Reader — A Statistical Survey" — Donald W. Palmer, Regulations and Forms Division, United Air Lines, Chicago, Ill.
2. "Simul-Animation" — Glenn E. Miller, President, Glenn Miller Enterprises, Inc. Hollywood, Calif.
3. "Proposal Writing" — Leonard K. Adler, Advanced Program Development, Space & Ballistic Missile Systems, Hughes Aircraft Company, Culver City, Calif.

3:15 to 5:00 p.m. Concurrent Panel Sessions

Panel No. 1 — *Editing*

Moderator: Warren H. Deck, Manager, Instruction Books, General Electric Company, Schenectady, N. Y.

"Better Written Expression"

Prof. W. Earl Britton, Professor of English, University of Michigan, Ann Arbor, Mich.

"What the Writer Expects the Editor to Do"

Robert K. Shnitzler, Head, Publications Section, Advance Industries, Inc., Cambridge, Mass.

"What Kind of Editor Are You?"

Allan Lytel, Manager, Proposal Coordination, Crosley Division, AVCO Corp., Cincinnati, Ohio

Panel No. 2 — *Graphic Arts*

Moderator: Robert Shockney, Supervisor Graphics Section, Support Publications Department, Convair-Astronautics, San Diego, Cal.

"Photo Composed Electrical Diagrams"

Donald F. Thompson, Graphic Arts Specialist, General Electric Company, Roanoke, Va.

"The Future of Graphic Arts"

Norman R. Reamer, Graphic Analyst, Graphic Sciences Laboratory, Stanford Research Institute, Menlo Park, Calif.

Panel No. 3 — *Maintenance Data*

Moderator: Prof. Jay R. Gould, Rensselaer Polytechnic Institute, Troy, N. Y.

"Maintenance Manual Human Factors"

Donald Green, Collins Radio Company, Cedar Rapids, Iowa

"Application of Human Factors to Maintenance Manuals"

Donald Gaines, Collins Radio Company

"Modularized Handbook Concept for Modularized Equipment"

Joseph Innis, Collins Radio Company

"Modularized Handbook Evolution and Development"

Vernon Paul, Collins Radio Company

Panel No. 4 — *Education and Training*

Moderator: Frank M. Van Sickle, Manager, Publications Branch, Missile Division, Chrysler Corporation, Detroit, Mich.

"Writer Training"

Ralph L. Cummins, Manager, Writing Section, Publications Branch, Chrysler Corp., Detroit, Mich.

"Management Developments"

Robert M. Boltwood, Head, Reports and Editing Dept., Publications Branch, Chrysler Corp., Detroit, Mich.

"Technical Writer Education from College Level Sources"

Dr. Herman M. Weisman, Colorado State University, Fort Collins, Colo.

Panel No. 5 — *Technical Publicity*

Moderator: Daniel C. Cahill, Manager of Public Relations, Illinois Institute of Technology and Armour Research Foundation, Chicago, Ill.

Participants:

William C. Tracey, Manager of Public Relations, Space Technology Laboratories, Inc., Los Angeles, Calif.

Edmund Van Deusen, Jordan & Van Deusen Co., Laguna Beach, Calif.

James Connell, James Connell & Assoc., Washington, D. C.

Bruce MacKenzie, Editor, IBM *Journal of Research & Development*, New York, N. Y.

5:00 to 7:00 p.m. Cocktail Party

6:30 p.m. Chicago Night Life Tour

FRIDAY, APRIL 22, 1960

9:00 to 10:00 a.m. Business Session — STWE

Thomas A. Grogan, President, presiding.

9:00 to 10:00 a.m. Business Session — TPS

Carl M. Johnson, President, presiding.

10:00 to 10:30 a.m. Coffee Break

10:30 to 11:10 a.m. General Session

"Technical Information — in the U.S.S.R. and in the United States"

John Green, Office of Technical Services, U. S. Department of Commerce, Washington, D. C.

11:15 to 12:00 noon. General Session

"Effective Communication"

C. J. Dover, Consultant, Employee Communications, General Electric Company, New York, N. Y.

12:30 to 2:00 p.m. Luncheon

Carl M. Johnson, President, TPS, presiding.

"The Technical Information Challenge"

Speaker: Curtis G. Benjamin, President, McGraw-Hill Book Company, Inc., New York, N. Y.

1:30 to 5:15 p.m. Sightseeing Tour of Chicago

Expects the Editor to Do"
nitzler, Head, Publications Section,
ries, Inc., Cambridge, Mass.

itor Are You?"
Manager, Proposal Coordination,
n, AVCO Corp., Cincinnati, Ohio

ic Arts

Shockney, Supervisor Graphics Sec-
Publications Department, Convair-
an Diego, Cal.

Electrical Diagrams"
hompson, Graphic Arts Specialist,
c Company, Roanoke, Va.

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Reamer, Graphic Analyst, Graphic
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M. Van Sickle, Manager, Publica- 11:
Missile Division, Chrysler Corpora-
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anch, Chrysler Corp., Detroit, Mich.

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ons Branch, Chrysler Corp., Detroit,

Education from College Level

Weisman, Colorado State University,
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"The Technical Information Challenge"

Speaker: Curtis G. Benjamin, President, McGraw-Hill Book Company, Inc., New York, N. Y.

1:30 to 5:15 p.m. Sightseeing Tour of Chicago

CHICAGO NIGHT LIFE TOUR

The Hospitality Committee has arranged a special escorted "Night Life Party Tour" for the delegates and guests of the 1960 STWE-TPS Convention in Chicago.

This party is scheduled for Thursday, April 21, departing promptly at 6:30 p.m. from the convention headquarters at the Drake Hotel. The first stop is the fabulous Chez Paree. There party members will enjoy a pre-dinner cocktail, a complete seven-course dinner, after dinner liqueur, dancing, and the first complete floor show. The second stop is the unique Blue Angel, for a calypso extravaganza revue and a cocktail. The third and final stop is the new Carousel-in-the-Sky atop the Morrison Hotel, 44 floors high, for a cocktail in the clouds and a panoramic view of Chicago (if the weather man cooperates).

The total cost of $15.50 per person includes all charges, taxes, transportation, and tips.

SIGHTSEEING TOUR

A complete sightseeing tour of Chicago also has been planned. It will leave the Drake Hotel at 1:30 p.m. on Friday, April 22, returning at 5:15 p.m. The drive will cover the downtown area, Michigan Avenue shopping district, North Lake Shore Drive, Lincoln Park, South Lake Shore Drive to Jackson Park and the Museum of Science and Industry, the University of Chicago, and many other interesting areas of Chicago. The total cost is $2.75 per person, including tax.

AIR FORCE MISSILE FILM

A new motion picture film, "Air Force Missile Mission," produced by the United States Air Force will be shown at the 1960 STWE-TPS Convention. This film stars Brigadier General James Stewart.

ADVANCE REGISTRATION FORM

SEVENTH ANNUAL STWE CONVENTION meeting jointly with the TECHNICAL PUBLISHING SOCIETY

April 21-22, 1960 • Drake Hotel • Chicago, Ill.

NAME _____ POSITION _____

AFFILIATION _____

CITY _____ STATE _____

Member of ☐ STWE ☐ TPS ☐ Nonmember

	STWE and TPS Members	Nonmembers
REGISTRATION (Thursday & Friday)	☐ $12.50	☐ $17.50
REGISTRATION (Friday only)	☐ $10.00	☐ $12.50

(*Note*: Registration fee includes a copy of the published Proceedings of the 1960 Convention.)

LUNCHEON — Thursday	☐ $3.75
LUNCHEON — Friday	☐ $3.75

_____ Check enclosed _____ Will pay on arrival

Please print or type. *Closing date for advanced registration is April 13.*

To assist the committee in its plans, please indicate your interest in the following convention activities:

Panel Sessions

(Circle those you may attend.)

1	6
2	7
3	8
4	9
5	10

Tours (No Obligation)

Yes	No	
☐	☐	Chicago Night Life Party Tour, including Chez Paree dinner and show. $15.50.
☐	☐	Sightseeing Tour of Chicago. $2.75.

You may pre-register for the 1960 STWE-TPS Convention by mailing this form to:

STWE
P.O. Box 3706
Beechwold Station
Columbus 14, Ohio

Closing date for advanced registration is April 13.

2:30 to 4:30 p.m. Concurrent Panel Sessions

Panel No. 6 — *Resident Writing Assistance — Good or Bad?*

Moderator: Edward A. Stearn, Radio Corp. of America, Van Nuys, Calif.

Speakers:

Gladden S. Evans, Jr., Supervisor, Writing & Editing Group, Technical Publications Section, Hughes Aircraft Company, Fullerton, Calif.

James Campbell, Superintendent, Technical Publications, Western Electric Co., Winston-Salem, N. C.

Panel No. 7 — *Automation and the Future of Technical Writing*

Moderator: H. Peter Luhn, IBM Mohansic Laboratory, Yorktown Heights, N. Y.

"Scientific Writing — Past, Present, and Future"

Robert E. Hohmann, IBM, Kingston, N. Y.

"Automated System of Report Preparation"

Norman J. Smith, IBM, Kingston, N. Y.

"Automated Preparation of Parts Catalogs"

R. F. Cunningham, IBM, Kingston, N. Y.

Panel No. 8 — *Technical Reports — Their Preparation and Use.*

Moderator: Dr. Hoylande Young, Director of Technical Information, Argonne National Laboratory, Lemont, Ill.

"Improved Written Communications"

James O. Howe, Standard Oil Company of Indiana, Whiting, Ind.

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James O. Howe, Standard Oil Company of Indiana, Whiting, Ind.

"Expediting Written Communications on an International Scale"

John H. Martens, Argonne National Laboratory, Lemont, Ill.

"Philosophy of Technical Report Writing"

Arthur Guillaudeu, Consultant on Report Writing, Chicago, Ill.

"Training Young Scientists and Engineers for Written Communications"

Prof. Margaret D. Blickle, Ohio State University, Columbus, Ohio

Panel No. 9 — *Company Publications*

Moderator: Dr. Harry F. Arader, Manager — Public Information, General Electric Research Laboratory, Schenectady, N. Y.

Participants:

Bruce MacKenzie, Editor, IBM *Journal of Research & Development*, New York, N. Y.

Alan A. Smith, Editor, *Industrial Bulletin*, Arthur D. Little, Inc., Cambridge, Mass.

M. M. Matthews, Managing Editor, *Westinghouse Engineer*, Pittsburgh, Pa.

Panel No. 10 — *Technical Magazines*

Moderator: Neil P. Ruzic, Editor and Publisher, *Industrial Research*, Chicago, Ill.

Participants:

Harold A. Bergen, Burson-Marsteller Associates, Chicago, Ill.

James A. Lippke, Managing Editor, *Electronic Design*, New York, N. Y.

Barry Miller, Avionics Staff Editor, *Aviation Week*, New York, N. Y.

4:30 p.m. Adjournment

The Technical Writer's Role in Advertising and Public Relations

John B. Bennet

Everyone involved in the technical aspects of better communication is concerned with helping to improve the public's understanding of technical developments. It might therefore be interesting for us to look at a growing field in which the technical writer can make an important new contribution. In following this idea through, we will see how the technical writer's employer will also gain greatly from this additional activity.

Today's increasing need for good communications between different groups of the business and economic world is generally well recognized in theory. Manufacturers of consumer goods are spending millions on advertising. However, many companies which do not deal directly with the consuming public have paid much less attention to the need for publicity. A surprising number of small- and medium-sized companies in the various technical fields have neglected to use the full capabilities of their publication departments in the related fields of advertising and commercial publications. This neglect has been a natural one, growing out of the past history of the publication department. In many cases, the publication department was created to prepare books and manuals for military equipment, and management's subsequent thinking has been channelled along these lines. Consequently, when advertising or commercial publications have been required, outside sources or separate new departments have been considered.

However, advertising and commercial brochures can be prepared by the company's own publication department with complete success. The orientation of the department to this added activity is not difficult, and their product will, in most cases, be less costly than that of an outside source.

How often have you wished that more information about *your* company would get around to your customers and to the public? Here is a way to make sure that the right kind of information does get around. Here is a program for doing this job yourself, using your own facilities and know-how without the need of expensive additional advertising and publicity budgeting. Right now you have the talent that you can put to work to tell your company's story to its customers, employees, future employees, stockholders, and the community in which you live and work.

In order to understand why and how this can be done, we must first understand the role of the technical writer or, as he is sometimes more appropriately called, the publications engineer.

The present day technical world has become very complex and this complexity is increasing daily. Technical writing has sprung up because of the need for effectively spreading technical information among engineers and scientists. *Even* engineers cannot completely understand complex equipment without some written word of explanation in the form of a report or an instruction manual. The publications engineer has so far taken care of this communication among technical men. The next step is to include the general public in this better understanding of technical facts and information. Someone is needed to interpret these facts and to present them in a salable form to customers and the public. The publications engineer is the logical man to do the job of making a laboratory product appear less complex and therefore more comprehensible to the layman.

The publications engineer is trained and experienced in the preparation of publications to provide technical information to engineers, technicians, and administrators. He knows how to explain technical facts. He has a good understanding of the company's products and, even more important, he has a feeling for the company's spirit and ways of doing business. He can therefore present technical achievements made by the company in the best possible light to the general public and to specific customers.

Under such an arrangement, a company can produce a lot of good advertising and do some sound public relations work without having to spend a lot of money. This publicity work may take the form of pamphlets, sales brochures, news releases, films, or advertisements.

Like any other industrial activity, publicity must be carefully planned to ensure its success. We can assume that excellent manpower and material resources are available, but they must be properly organized and used. Therefore the first step in this program must be to plan the effort and to assign responsibilities.

PLANNING A PUBLICITY PROGRAM

Possibly the most important step to ensure the success of your program is a clear definition of its objectives. You must decide clearly what you want to accomplish through this effort and how you want to do it. Complete agreement on these points must be reached *from the start;* otherwise you will find yourself trying to meet contradictory objectives favored by different individuals. The following points should help you in arriving at a basic definition of the program:

1. Establishment of a policy of approach (to set the tenor of the campaign).
2. Decision on important selling points to emphasize.
3. Choice of mediums to be used.
4. Allocation of funds for the program.
5. Decision on nature of publicity (direct selling versus information only).
6. Definition of recipients of publicity material (customers, trade groups, public, employees).
7. Appointment of a *single* head to coordinate the program and to make all pertinent decisions.

Your publicity effort would not succeed if you tried to consider contradictory preferences expressed by different persons. If you try to please everybody in your company, you won't appeal to your prospective audience.

The man appointed by management as coordinator now has the job of putting the publicity program into effect to meet the objectives that have been chosen. The man appointed to this job might be selected because of past experience in publicity work; he might also be the sales manager or a member of the sales department especially interested in publicity. In some companies he might come from Engineering or Personnel. His duties as publicity coordinator constitute only a part-time job, and he usually would be able to attend to his other work as well.

IMPLEMENTING THE PROGRAM

The next step is to find within your organization the personnel needed to do this job. Regardless of the medium, you need men to write copy and others to prepare illustrations: writers and artists. You should remember that you are not preparing material for a consumer, you are trying to address industrial customers, trade groups, or government agencies. As a result, your publicity material should be fairly technical. It would be a good plan to get most of your ideas, and the bulk of your information, from your engineering department. Let your engineers suggest the equipment or services that should be emphasized. Let them specify the outstanding features of a product. To achieve the proper expression of this engineering thinking, the publications engineer especially fits into the picture.

Let's assume that we are considering preparation of a sales brochure. First of all, the publications engineer has to collect all the background information for a given publicity project: the technical facts from engineering, the ideas to emphasize from sales, the philosophy of approach from top management. Next, the publications engineer has to decide on a specific approach for his brochure, establish a sequence of ideas, and make a rough layout. Once the main ideas are frozen, he begins to prepare the necessary text portions; at the same time he instructs an artist, who works with him, in the preparation of the illustrations he needs.

As the publications engineer goes along, he must check from time to time to make sure that he is sticking to the original objectives. The man responsible for coordination should help in this and also keep a sharp eye on the costs of this work.

It should be noted that the engineers and illustrators are assigned only on a part-time and temporary basis to this work; there should be no need for additional personnel, just a little extra effort. Try to use, as much as possible, material from existing technical reports or handbooks your company has prepared. On the other hand, whenever you are working on an interesting equipment or assembly, take photographs immediately for use in future publicity work.

The men assigned to your publicity work should be free to collect material from all sources. Once they understand the objectives, they should be given a free hand to prepare the publicity material. Their knowledge of what to emphasize and their true enthusiasm for your company and its products ensure a convincing presentation.

Printed brochures are the most effective form of industrial publicity, but they should not be too extensive; if they exceed 20 to 30 pages, your prospective reader will get tired and lose interest. Therefore a fairly strict time limit of about 5 man-weeks should be set for the preparation of copy for the brochure. There is always the danger that jobs of this type are being continuously improved, but never finished.

FINAL PREPARATION OF PUBLICITY MATERIAL

Once the material has been prepared and approved by management, the publications engineer should arrange for its final reproduction. He should investigate appropriate commercial channels and determine the cheapest and best way for this final preparation. Remember that in the printing of your brochures, quality is more important than savings of a few dollars. A poor printing job can *ruin* the good effect of an excellent brochure or pamphlet.

In making these printing arrangements, here is a list of some of the things you should consider:

1. Selection of method of reproduction (letterpress or offset).
2. Choice of colors.
3. Size of final publication.
4. Type and quality of paper.
5. Cost versus quality of work.
6. Quantity of copies to be obtained.
7. Format of publication.

When your films, pictures, or brochures are delivered, you will experience a moment of rare satisfaction. Here is a piece of publicity material which is a product of the enthusiasm and the loyalty of people making up your company. This piece of work truly expresses the mood and the spirit of your organization. No outsider could have ever captured your philosophy of business as well and expressed it as beautifully. A good job has been done, a program well started.

By making contributions in this field of technical publicity, the publications engineer has taken on a new role. He has created something very important for his employer and he has at the same time enlarged the status of his profession. This is a *new* field and it can be expected to grow in the years to come. Ω

About the Author . . .

JOHN B. BENNET *is assistant to the President ITT Laboratories. He has been with the ITT System since 1957. From 1951 to 1957 Mr. Bennet was with Hazeltine Corp. where his last position was head of engineering service.*

A Word To The Wise

Laurence V. Nelson

Would you like to cut your typesetting costs by one-third? It *can* be done. Yes, and the means of accomplishing this desired end lie wholly within *your* power. The catch is this: You will have to reorient your thinking and completely re-evaluate certain publications skills that are now largely held in low esteem and consequently are performed by deplorably unskilled personnel.

The writer of this "minority report," a journeyman printer for over 20 years, is currently on the composing room staff of a west coast typographer. He also has had recent and comprehensive experience as production manager in the technical publications department of one of the largest airframe manufacturers on the west coast. The observations that follow are based on knowledge gained from working at both ends of a publications enterprise.

Let us first review certain general principles:

1. Any bid for typesetting is based on the assumption that copy submitted has been carefully edited and represents, *in detail,* precisely what the publisher wants.

2. A publisher does *not* want, nor does a competent typesetter ever presume to furnish, critical editorial scrutiny of copy submitted for typesetting.

3. The cardinal rule of the competent typesetter (as with all other good businessmen) is that the customer is always right. In typesetting practice this means that copy must be followed "out the window."

4. When copy thus followed does not represent precisely (or even approximately) what the publisher wants, the changes marked in proofs to bring the finished product into proper focus are called "author's alterations" and are properly charged for at a premium rate.

It is clearly understood, of course, that the technical writer works under constant pressure in a constantly changing environment. Little wonder, therefore, that his manuscript must change direction frequently and that he must ever be on the alert to revise completely, if necessary, its entire organization. Consequently, in the technical publishing field, constant revision is standard operating procedure. The cost of such revision is one of the most basic and necessary costs of progress. In actual practice, however, there is an element of utterly needless change, an increment of utterly needless cost, that results from an industry-wide policy in the selection of personnel.

THREE BASIC SKILLS REQUIRED

In the production of a technical manual there are *three* basic areas in which extensive knowledge and practical know-how are required, not just two. A vigorous debate has taken place among those concerned anent the relative merits, as a potential technical writer, of the literate engineer versus the skilled writer. Conceding without argument that there are unlimited reservoirs of talent in both groups, the writer contends that efficient accomplishment of the publisher's objective will never take place until the publisher recognizes, and recruits personnel from, a third category of skilled publications specialists — copy preparers.

Since the term "copy preparer" delineates altogether different skills in lithography and typesetting, let it be made clear at this point that the skill here being spotlighted is that applicable to typesetting only. In this context a "copy preparer" is a journeyman printer with years of experience, particularly in proofreading, who is competent to mark up and, within prescribed limits, edit copy.

Here is a "printer's-eye-view" of the technical editor-writer: A person of whom miracles are expected, he is, perforce, a writer; but he must also, in effect, be an engineer-scientist. To the great credit of the profession, let it be said that many technical writers and editors fulfill such grandiose expectations far more than adequately. The fact remains, however, that research and

writing are only a part of his job. He is expected to see his brainchild through the transformation process from raw copy to finished printed product.

AREA FOR CONCERN

It is precisely in this area of typographical know-how that the vast majority of technical writers and editors fall pitifully short. We typesetters find it a little ironic that job specifications in technical publishing are drawn to such high standards and yet the performance level — as judged by the copy we process — is so deplorably low.

Why is management not aware of this? Because management rarely ever has to contend with the problem. Actual typesetting is done by a subcontractor. He is in a highly competitive business. Is he likely to jeopardize a substantial account by informing its management that copy submitted by them (when considered in the minute detail of character-by-character transcription that is a necessary part of typesetting) is miserably substandard? Of course not! And so what happens?

The problem falls right in the lap of the compositor and proofreader. These functionaries, if they know their business, are well grounded in basic English grammar and syntax, and they know how to spell. They can differentiate between a restrictive and a nonrestrictive clause — an item of learning that many technical editors apparently have missed. In addition to this, they know type faces and are thoroughly familiar with the use and application of proof- and copy-readers' marks. If the publication is one they have worked on before, they are familiar with its style.

Now they are confronted with a sheaf of illegibly scribbled sheets beside which a Chinese road map would be a model of clarity. They are mystified by editorial "corrections" which would, for instance, change *vertical* to *verticle,* and by editorial incapacity to distinguish proper usage of such common homonyms as *principle - principal, breach - breech,* and *affect - effect.* They are mystified by editorial markings that are clearly and unequivocably out of harmony with the style of the publication. They are mystified by procedures and practices in layout and planning that are time-consuming and wasteful and, in many cases, flagrantly in violation of accepted usage. Their intelligence and knowledge impel them to make some attempt to contribute constructively to this publications effort. Unhappily, however, they are thwarted by the trade's time - sanctioned admonition to "follow copy out the window."

WHO PAYS THE BILL?

Inevitably the result of this chronic dilemma is lowered morale or studied indifference. Because of this situation the publisher (and ultimately the taxpayer) is penalized in three ways: (1) by the extra shop time consumed in processing miserably prepared copy; (2) by the premium cost of corrections, if discovered and marked in the galley proofs; or (3) by failure of the editors to discover the existing imperfections and consequent issuance of a mediocre and, in some instances, a dangerously misleading or erratic document.

To those who feel that this indictment is too sweeping, that the picture it presents is inaccurate, the writer would suggest a private, "off-the-record" conference with your printer. If he *is* a printer — not just a salesman — he knows what the writer is talking about.

How can this situation be alleviated? Basically the alleviation must start with a realization on the part of the "prime movers" within the publications enterprise of the value to their operation of a thoroughly trained professional copy preparer. Once the basic realization has been formed, there must follow a clear-cut understanding by all concerned of the boundaries of the province within which this publications specialist is to operate. These boundaries may be said to encompass all phases of the publications effort during the transformation process from copy to reproduction page, including editing.

DUTIES OF THE COPY PREPARER

Since it is a heresy to suggest that anyone other than a technical editor take liberties with the technical writer's prose, it is important here to pinpoint precisely what is meant. The primary evaluation — as to form, substance, and technical accuracy — falls naturally within the province of the technical editor and must be accomplished by him. Once this has been done, and a satisfactory revision agreed upon, the copy is ready to be given to the copy preparer for final processing.

In his treatment of the copy, the copy preparer does not make radical editorial changes. He is *not* held responsible for the accuracy of technical data (other than to make certain that they are transcribed accurately — and *legibly* — from original copy). He does, however, read the copy critically for errors and inconsistencies. When possible, he consults the author in regard to what he reasonably suspects to be inaccuracies or inadvertent misstatements of fact, but he recommends no changes that cannot be justified on all accounts by thoroughly competent authority. The copy preparer's most important editorial function is to seek out and expunge from copy all errors of the type that even senior technical writers and editors, because of their preoccupation with other matters, frequently overlook. Further than that he functions as layout man, liaison contact with the vendor, and typographical consultant.

SALARY OF THE COPY PREPARER

The services of such a man are not to be obtained for a song, however sweetly sung. The scale for printers on the west coast ranges upward from $3.10 per hour for a 36¼-hour work week. Most thoroughly competent journeymen are paid a substantial premium over the scale. The minimum comparable salary, therefore, that would be acceptable to a suitably qualified typographer contemplating a change to technical publications, with their basic 40-hour week, would be in the neighborhood of $700 a month.

In justification of such a minimum-salary requirement for such an employee, it is suggested that some research into cost factors be undertaken. It need hardly be pointed out that the typesetter's time charges range upward from $10 an hour. Cost mounts fast enough at this rate, even when copy has been carefully prepared. When, as normally happens, copy is released to the typesetter replete with *inadvertent* errors, cost mounts astronomically. For obvious reasons, there will never be any complaints about this situation from subcontracting typesetters.

It follows that if the manufacturers (or the military procurement agencies) were to insist on the services of a copy preparer in every handbook activity large enough to warrant it, such a specialist could save far more than his annual salary in the countless ways available to him. Through his knowledge and training, he can reduce costs, save time, and impart to the finished, printed product that intangible, elusive, but psychologically potent quality known as "style." Ω

About the Author . . .

LAURENCE V. NELSON *was educated at the United States Naval Academy (class of 1931) and Massachusetts Institute of Technology. Excluding World War II service, from which he emerged with the rank of Lt.-Cmdr., USNR, he has spent the last 25 years in printing and publishing. All but five years were served as a journeyman printer in the Midwest and on both coasts, including a sojourn in the Government Printing Office in Washington. For five years he was Production Manager in the Technical Publications Department of Douglas Aircraft Company, El Segundo Division. He is presently on the composing room staff of John F. Mawson Company, Los Angeles.*

A Writer's Cookbook

R. M. Reid, Jr.

Every supervisor of a writing group knows the dilemma of deciding what to do with the new man. He knows the despair of watching the man-hours go down the drain without producing needed copy.

It has been said that anyone who can read can cook. The prospective chef need only supply the ingredients; his recipe supplies the quantities, the order, and the method of mixture.

The beginning writer is a similar case. He can supply only the ingredients as a result of his technical training and the accessibility of data on the equipment about which he is expected to write. The order and the method of coverage normally come from experience. Since he has no experience, he must draw upon the experience of his supervisor. The supervisor must supply the cookbook.

It seems that the greatest training load comes when the budget and schedules are tight. At the most crucial moments, the new man not only spends his own time unproductively, but he also requires the more valuable time of experienced personnel for nonproductive training. When a project expands by leaps and bounds and the new men outnumber the experienced, chaos can and often does result.

The cookbook technique can solve these problems. The technique demands that each writer be told what, when, and how much. This does not mean that the supervisor must constantly stand beside the new writer and put words in his mouth. It does mean that the supervisor must perform one of the primary but often forgotten functions of the supervisory level, i.e., to make certain that each worker has the proper tools with which to do the job.

Some of these tools are (1) an editorial style guide; (2) an accurate, complete, and up-to-date outline; (3) a complete list of nomenclature; and (4) a checklist showing what coverage is expected under paragraphs such as general description and the first paragraph of theory.

The procedural step is probably the most "cookbook" of all technical writing. Assuming, of course, that he has the technical background and ability, the beginning writer can be producing copy after a very minimum of instruction.

STYLE GUIDE NECESSARY

The editorial style guide should supply most of this instruction. Besides dictating the use of imperative mood, action verbs, and the omission of articles, an adequate style guide will anticipate many of the writer's other problems. For example, editors at The Martin Company have foreseen the problems in handling procedural steps which involve the positioning of switches and controls. Observation showed that the overwhelming majority of switches were placarded one of three ways. The following style is given in the guide:

1. Both positions of the switch are labeled. Show each position in text exactly as it appears on the equipment:

   a. Place START switch ON.

   b. Place START switch OFF.

2. Only one position of the switch is labeled. Show the labeled position in text exactly as it appears on the equipment. Write the other position in lower case:

   a. Place START switch ON.

   b. Place START switch in off position.

3. Neither position of the switch is labeled. Write both positions in lower cased followed by the physical position in lower case and in parentheses:

   a. Place START switch in on (up) position.

   b. Place START switch in off (down) position.

The same approach may be applied to a wide variety of situations. Consider the application of drilling procedures. Part A might be marked and drilled X size, Y number of places. Or part A might be placed on

part B and used as a guide to mark part B after which part A is removed and part B is drilled X size, Y number of places. Or part A might be placed on part B and part B drilled through part A. A standard set of steps could be chosen to fit each of these categories.

The possibilities are unlimited. In every case the writer only has to determine the proper category and fill in the blanks.

OUTLINE IS VERSATILE

The outline is a tool with which every writer and every writing supervisor is familiar. Yet very few writers make full use of the versatility of this tool. Versatility is lost in most cases because the outline, once prepared, is not kept up to date with organizational changes. The outline must be constantly revised as the organization of the book becomes more refined.

One system has worked to advantage at Martin. A rough outline is prepared which lists every primary and every subordinate side-head exactly as they will appear in the completed book. An attempt is made to anticipate all figures and tables, and these are listed in the proper position with the correct titles.

A copy of this outline is given to each writer in the group and a master copy is retained by the group editor. Each writer begins to organize his particular area of responsibility so that it fits the outline. Almost invariably he discovers better ways to present the material. The group leader checks each idea for soundness and compliance with the over-all format. When a new presentation is agreed upon, the change is indicated in the master outline, and a revision page is subsequently issued to bring all copies up to date. This process continues right up to the last writing day. The editor constantly refers to the outline to see that manuscript submitted to him fits into the outline, and each writer is kept aware of changes and innovations being made by other writers in the group.

BY-PRODUCTS ALSO RESULT

Several unexpected but advantageous by-products have resulted from the use of this system. Since the outline always reflects the exact paragraph and figure content of the complete handbook, a sort of perpetual inventory can be kept by merely checking off completed paragraphs in one copy of the outline. This provides a daily status report as well as a constant indication of slow-moving or trouble areas.

To prepare the table of contents, list of illustrations, and list of tables, page numbers may be entered in the outline beside the corresponding paragraph, figure, or table and the job is done. Thus every entry in the front matter exactly duplicates the paragraph, figure, or table title elsewhere in the handbook.

An indispensable tool to the cookbook concept is the nomenclature list. This is nothing more than a listing of each item of equipment by the correct formal nomenclature. The list should be prepared before a single word of text is written. As nameplates, front panel engraving, and blueprint titles are checked, numerous inconsistencies will undoubtedly become apparent. The time to get these inconsistencies resolved is right then. Wait, and the old nomenclature problem will haunt you. And it won't go away. It will turn up repeatedly throughout the entire span of the project.

When completed, the nomenclature list helps to eliminate the old bugaboo of nomenclature consistency. The writer has a convenient reference during the writing phase, and the editor has the same reference with which to check capitalization as well as nomenclature. On a large project where several writers are working on related equipment, the list eliminates the constant wonder about what to call eqiupment being covered by other writers. Cross-referencing other equipment is reduced to the simple job of locating the other equipment in the list.

PROBLEM OF WHAT TO WRITE

Probably the greatest stumbling block to the beginning writer is straight text, and the worst section of the handbook is likely to be general description. Although theory of operation is more difficult than procedural steps, it does not seem to present such an obstacle. This observation leads to the conclusion that *how* to write is not nearly so much a problem as *what* to write. Here is where the new man sits and wonders and fails to produce copy in proportion to the time he spends. But a little planning on the part of the supervisor or group leader can bring even straight text writing quite close to the cookbook variety.

In most handbooks, a short descriptive paragraph must be written about each item of equipment. Especially in handbooks covering large or complex equipment, the number of such paragraphs can run into the dozens. Basically the same type of information must be given about each item. So here is what to do.

Take another long look at the applicable specification. Read between the lines if necessary. Come up with a list of points to be discussed in every paragraph of a particular type. Let us assume that the problem is general description. Let us further assume that the equipment consists of six or eight dozen chassis, all of which must be described individually, and that several new writers will be used to get the job done. To make things worse, the spec is not specific about what should be said about each unit; it mentions something vague about a "physical" description and a "brief statement of function."

OUTLINE FOR DESCRIPTION

Instead of saying that this is a dandy little unit and would make a lovely addition to any tactical site, give the customer a little more for his money. The following outline has been used, with variations, at The Martin Company with considerable success:

1. Purpose.
   Type and source of input.
   Type and destination of output.
2. What makes up the unit?
   Does the unit contain one or more subunits?
   Is the unit sealed?
   Include any other outstanding physical characteristics.
3. What controls are available?
   Tell what is available without mentioning specific controls by name.
4. Where is the unit located?
5. How is the unit mounted?
6. What type(s) of power does the unit require?

Obviously no single outline will suffice for every handbook. Many factors must be considered when preparing this part of the "cookbook." Such factors as the level of the reader and the over-all purpose of the handbook will invariably alter the choice of points to be covered.

Regardless of the variations from book to book, the point is that a recurring question should be answered one time and one time only. When each man in a writing group sits and contemplates the same problem, cost of the handbook sky-rockets. Cookbook techniques will save you money. Try them. They work! Ω

About the Author . . .

R. M. REID, JR., *is a senior service engineer at The Martin Company in Baltimore. He is responsible for a number of handbooks on the Titan ICBM. After four years in the U. S. Air Force as an electronics instructor and radar mechanic, he was employed as a technical writer by Hayes Aircraft Corporation for two years. Mr. Reid attended Alabama Polytechnic Institute and The Johns Hopkins University.*

Flames swept across the open plains as the Mongol hordes ran in terror from the "arrows of flying fire". When the smoke had cleared the Chinese had won the battle of Pienking with the first rocket.

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Our technical writers have not all been cast in the same mold. Some have degrees in the sciences, some in English and journalism, some have no degrees. They have worked as physicists, mathematicians, engineers, technicians, teachers, film writers, public relations men, and so on. Many are ex-servicemen with specialties in electronics, ordnance, communications, supply, aviation, and training.

We can, however, tell you what our technical writers are jointly required to do. They must write easily, clearly, and logically. They must know their subject-matter, their readers, and their publication requirements. They must be able to think independently, to analyze, plan, and organize their work.

Our Technical Publications Department assigns teams of writers to the preparation of instruction manuals on missile systems (POLARIS, TERRIER, TALOS, TARTAR), on torpedo systems, and on other related subjects. These teams work with our customers and with our engineering groups to gather technical data, plan and organize text and artwork, establish schedules, control costs, and write and edit publications that describe complex systems in the simplest, most easily understood terms. The more a writer knows about all aspects of his work, the more valuable he is to the project team. Most of our writers know several aspects and are learning others.

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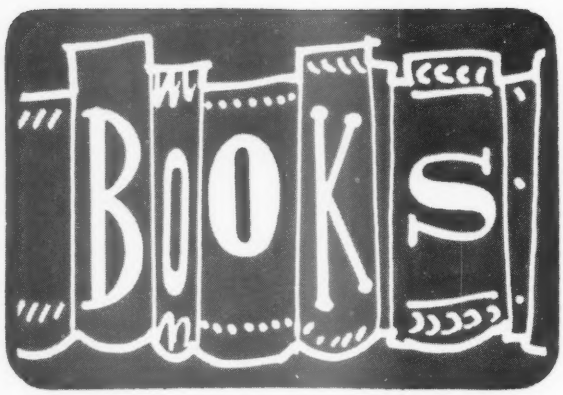

TWO-WAY RADIO. Allan H. Lytel. 304 pages. New York: McGraw-Hill Book Company, Inc. (1959). $9.50.

Two-Way Radio by Allan Lytel is the most comprehensive book published to date on mobile radio communications. Within its 304 information-packed pages are 283 illustrations which add greatly to the value of the book.

Not only does Mr. Lytel review the status of the art and the available equipment, but he fully explains the functioning of every type of circuit used in present day mobile radio equipment.

Mr. Lytel dwells deeply with modulation systems, FM and AM transmitters and receivers, antennas, selective calling, power supplies, and test equipment. He also outlines installation and servicing procedures, including how to make checks prescribed by the FCC.

This book, which undoubtedly required considerable time to research and prepare, is a valuable font of information for those who use and service mobile radio equipment as well as a reference for the equipment design engineer. Very well done!

Leo G. Sands

ABBREVIATIONS DICTIONARY. Ralph De Sola. 177 pages. New York: Duell, Sloan & Pearce (1958). $4.00.

The avalanche of jet-age jargon, gobbledygook, officialese, and pentagonese would soon snow us under were it not for a reference book such as De Sola's *Abbreviations Dictionary*. This volume is filled not only with abbreviations and acronyms but with contractions, short forms, signs, and symbols, including the Greek alphabet, international aircraft markings, numbered abbreviations, proofreader's marks, punctuation and diacritical marks, the radio alphabet, roman numerals, and even ship's bell time signals.

The author was a consultant in the preparation of the new military standard concerning abbreviations used in aircraft, missiles, rockets, ordnance, etc., which is being compiled by the Ordnance Handbook Office of Duke University for the Department of Defense.

The Foreword explains such matters as capitalization; correct method of using abbreviations (if at all); the golden rule — "when in doubt, spell it out" (and which like most rules is often forgotten or ignored); italics; punctuation of abbreviations; acknowledgments (from a humble and generous author); and an invitation to readers asking for their contributions to an expanded edition.

The contributor merely writes an abbreviation on a 3- by 5-inch card and sends it to the author, and it will be included in the next edition — providing it is not contrary to the author's sense of editorial taste. It may be observed that he is remarkably broad in his interests, and his lists show at least a shoulder-brushing with nearly all departments of human interest and learning.

Abbreviations Dictionary was selected by the American Library Association as one of the most useful reference works. It should be on the desk of every technical writer and editor.

E. I. Shouse

STEPS TO BETTER WRITING. Hilary H. Milton. 98 pages. College Park, Maryland: Professional Press (1959). $2.75.

A fair appraisal of *Steps to Better Writing* must recognize that the purpose of this book is not to be a large or complete work nor to cover all aspects of technical writing. It is not meant for writers of considerable experience.

Rather, as the title suggests, it is a set of steps, a short work of 98 pages, directed to business, technical, government, and industrial writers, especially those who produce manuals, handbooks, pamphlets, and the more common varieties of reports, and who need assistance at the primary level.

The opening section of 22 pages is devoted to an over-all view of the steps to better reporting. The second section includes five chapters entitled Steps to Better Organizing and Outlining, Steps to Better Continuity, Steps to an Effective Style, Steps to Better Use of Illustrations, and Steps to Better Editing. There is no index, but the table of contents is fairly detailed.

Mr. Milton, senior civilian presentations advisor and publications specialist with the Department of the Air Force, has prepared the book with the assistance of George B. DeGennaro, lecturer in English at George Washington University. He has evidently drawn upon his experience with government services in choosing the materials to present and has singled out what he must have discovered to be the primary areas of difficulty among the technical writers he has known. The same experience may underlie his adoption of the colloquial style in which he writes, with its generous use of the second person and heavy dependence upon verbs like *get* and *have*.

The brevity of the book has resulted in a work that is primarily preceptive rather than exemplary. Most of the illustrations are confined to the short units like titles, phrases, and sentences. Development, in view of the bounds within which the author has chosen to fashion his work, cannot be very complete. Yet the more primary one's material, the more essential that the subject be elaborated in detail. In this respect, it might have been advisable to shrink some areas in order to expand others. The definitions of grammatical terms — to cite one example — might have been omitted so that the sections on fallacies and illustrations could have been developed more fully.

In the hands of the right reader, this can be a useful book, particularly because of Mr. Milton's emphasis upon the responsibility of a writer to produce clearly understandable and readable prose.

W. Earl Britton

PRIMER OF LAMPS AND LIGHTING. Willard Allphin. Philadelphia: Chilton Company (1959). $10.00.

Mr. Allphin, who has been with Sylvania Electric Products for the past 16 years, has produced a useful book for anyone who is interested in lamps and lighting. The book is mainly intended for men in the lighting industry — salesmen, distributors, electrical contractors, architects, and maintenance men. It could also serve as a textbook in a vocational high school.

The first two chapters of the book cover the basic concepts of electricity and light. They serve as a good refresher course for the man who has grown a little

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rusty in basic physics, and a good introduction to physics for the high-schooler.

The remainder of the book is devoted to the detailed description of the three basic types of lamps (incandescent, fluorescent, and mercury), light meters, and hints on home lighting. A separate chapter explains the lumen method for determining how many fixtures are needed to provide a particular level of illumination and for computing the illumination level which can be expected from a given installation. Another important feature of the book is a lighting calculation slide rule which makes the lumen formula easy to apply.

Richard A. Hanousek

CONSTRUCTION OF RESEARCH FILMS. D. H. Densham. 94 pages plus glossary. New York: Pergamon Press, Inc. (1959). $4.50.

Published for the Advisory Group for Aeronautical Research and Development of NATO, this book is written "to give sponsors and scientists an expert approach to documentary and educational film making." Motion pictures are becoming almost standard for certain types of documentation, and this volume is an excellent introduction to the special problems facing any nonprofessional producer.

Each separate part of the picture-making process is discussed, in brief, in its own chapter. The subjects include the script, the breakdown, continuity, the director, the camera, camera movement and balance, lighting, color lighting and balance, sound recording, simple animation, and common film faults. The author is advisor on films to the Ministry of Supply in England and, quite naturally, many examples of equipment are those available in England.

The book is concerned with the special problems of education and industrial research; hence its title and general coverage. Professionals in the field of motion pictures will find this rather elementary. For those whose work only touches motion pictures or who need a good introductory volume, this book is recommended.

Allan H. Lytel

AMERICAN BUSINESS WRITING. Harvey E. Drach. 496 pages. New York: American Book Company (1959). $4.95.

A number of recent books on writing have either made incantations to such words as *communication theory* and *semantics* in an effort to over-awe the reader or they have resorted to superficiality in an attempt to convince him that they are offering a simple magic formula for success in writing. Now, at last, we have a good, honest book that treats business writing as craftsmanship — and tells how to go about it.

Thirty years of teaching business writing and acting as a consultant to industry makes Professor Drach's background in the subject both wide and intensive.

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His book, *American Business Writing*, does justice to it's title: it's not just a dull rehash of generalities but is as dynamic and interesting as American business itself.

In format, the book is divided into two parts: the first consisting of principles underlying the various kinds of business writing; the second, a handbook of methods for implementing those principles. The first and larger of the two parts discusses not only the common business letter, but also the composition of various kinds of form letters, collection letters, business reports, and interdepartmental communications. Chapters on Layout, Attracting Attention, Creating Desire, and Stimulating Action are as useful to the report writer as to the advertising copy-writer or the occasional correspondent. Part II contains brief but practical discussions of troublesome points of grammar and sentence structure, idiom, punctuation, and even spelling.

Technical writing, considered as a branch of business writing, is just as susceptible to the ills of jargon and cliché — usually self-imposed to "make it sound technical" — as any other branch, and it can just as easily be cured. Technical writing *can* be interesting. Writing to instruct does not necessarily exclude writing for effect, as the book itself shows. *American Business Writing* should be included in every technical writer's library.

L. W. Pathe

THE PENROSE ANNUAL (1958). Allan Delatons, Editor. 138 pages and 46 illustrations. New York: Hastings House (1958). $11.50.

An editor sees many books over a span of years: big books and little books, fat books and thin books, and good books and poor books. But an editor seldom sees such a breathtaking and beautiful use of graphic arts and color as in this volume. This book is printed in Great Britain and is, of itself, an outstanding example of typography, layout, and the use of color.

There are two sections. In the general section there are 16 articles ranging from a Graphic Arts Book List, an international listing, to the Magic Power of Magazines, an article with an eye-opening series of illustrations.

But the technical section is, perhaps, of greater interest. Some of the more interesting articles are Examination of Photogravure Cells, Bank-note Engraving, Colour Web Offset on Newsprint, Colour Correction: The Control of Variables, The Fluffing of Litho Papers, Litho from Xero Plates, Chromatic Giant, Electronic Colour Correction, Nylon Printing Plates, Screen Rulings and Print Quality, and Filmsetting for Letterpress Printing.

The Penrose Annual is not designed for the technical writer, but it is encouraging to see examples of how our everyday tools of ink and paper can be the means of creating a truly beautiful and a creative book.

Allan H. Lytel

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(Continued from Page 2)

coding and machine searching involves work on an international language for machine searching and translation. More than 300 abstracting and indexing services have been reported, mostly independent and uncoordinated, however. Many technical societies have phases of the abstracting work underway — the American Society for Metals is abstracting the world's metallurgical literature; the American Chemical Society indexes 100,000 articles a year in chemical literature.

The National Research Council, the National Science Foundation, and the Killian Science Advisory Committee all have indicated interest in this field of machine researching, and a fire has been built under the question of a need for a national information system by the Soviet All-Union Institute of Scientific and Technical Information (VINITI) in Moscow. This vast enterprise, with a staff of more than 2000, acquires, analyzes, abstracts, and disseminates technical information in the world's literature for the benefit of Soviet technical workers. (Possible clue to Russian success — Russian abstractors receive five times as much pay as American professional abstractors.) Despite the excessive American obsession against centralized activity by the government, the Russian success has lead the National Academy of Science to establish a documentation program.

A partial list of the activities in the field of "machine research" includes (1) ten books published by Interscience Publishers and Reinhold Publishing Corp.; (2) more than 100 papers and reports from the Western Reserve University Center alone; (3) a 5-year program by the American Society for Metals to test the feasibility of mechanized searching in the field of metallurgy; (4) a conference on Practical Utilization of Recorded Knowledge, attended by 600 persons in 1956; (5) a conference of Information Systems in Documentation, attended by 900 persons in 1957; (6) an international conference on machine searching and translation, held in 1959, with 75 papers from 10 countries; and (7) a program at the National Bureau of Standards, which has developed a microfilm selection device and computer routines applicable to experimental machine search.

All this indicates the extent of activity of the physical (mechanical and machine) approach to technical communications — but far, far less attention is being given to the education approach. The printed technical paper will indeed be delivered into the hands of the worker — but only scant attention is paid to the fact that he already receives more material than he can read, and that what he does read is too often not understandable.

This problem is the reason why much is heard of technical writing courses and articles and societies. But even within these activities there is little recognition that the problem is not mechanical or grammatical. Rather, it is a problem of level and perspective and overlapping frame of reference, permitting the reader to know why the author is proceeding along certain paths. This is basically a *technical editing* problem that is only now becoming dimly understood. As more and more persons realize that others, as well as themselves, can't understand that article or that book, the pressure will grow for published material that *can* be understood. Editors might even begin to read the manuscripts they now edit.

Milton H. Aronson, Editor
Instruments and Control Systems

To Editor, *STWE Review:*

The technical editor has a duty to communicate correctly and to explain communication techniques to the engineers and scientists with whom he works. A technique for simplifying graphs and tables, namely, use of 10^{x} or 10^{-x} in legends, is being used incorrectly in many publications, and many editors as well as engineers are confused about the matter. The confusion has become so widespread that some authorities advocate avoiding the use of 10^{x} in legends.

We cannot remove the confusion by avoiding the issue, for usage of 10^{x} or 10^{-x} in legends is thoroughly established. However, willingness to analyze the problem is all that is needed to understand the cause of confusion and to follow a correct usage.

Two styles — both correct — are in use. Where one of these styles uses 10^{x} the other uses 10^{-x}. Because engineers and editors have failed to note the basic difference in these styles, "Altitude (ft x 10^{3})" is used by some engineers and "Altitude (ft x 10^{-3})" is used by others. Yet both groups have the same idea in mind, namely, thousands of feet. The fact that the reader knows which unit is intended cannot be accepted as an excuse for incorrect usage.

On page 39 of Journal of Applied Mechanics, Vol. 23, No. 1, a graph showing strain plotted against time has the ordinate labeled as follows:

Strain, E x 10^{6} (in./in.)

The scale reads 0, 2000, 4000 . . . 20,000. Here the scale is read by dividing by 10^{6}, i.e., 4000 represents 0.004000 in./in.

On page 179 of Product Engineering, Vol. XXVI, No. 13, a graph showing bending modulus plotted against fiber content has this ordinate label:

Bending modulus, psi x 10^{6}

The scale reads 2, 4, 6.

Here the scale is read by multiplying by 10^{6}, i.e., 4 represents 4,000,000.

Because these two styles exist some engineers swear that a graph is always read by dividing by 10^{x} and others swear that you multiply. The key to understanding the problem is punctuation.

In both legends the item concerned is clearly separated from the units of measurement. In the first, the unit is shown as "(in./in.)"; in the second, the unit is shown as "psi x 10^{6}," i.e., 1,000,000 psi. Thus

$$\text{Strain, E} \times 10^{6} = 4000 \text{ in./in.}$$

$$\text{E} = \frac{4000}{10^{6}} = 0.004000 \text{ in./in.}$$

$$\text{Bending modulus} = 4 \text{ psi} \times 10^{6} = 4{,}000{,}000 \text{ psi}$$

In this manner the editor can show that the mere matter of understanding the punctuation makes the problem vanish. (The use of parentheses to separate the units from the item concerned makes a more distinct separation than the use of the comma.)

It immediately becomes apparent that for a given graph the sign of the exponent of 10 depends upon the style of the legend. For example, if the first graph is set in the style of the second one, the ordinate legend becomes

Strain, E (in./in. x 10^{-6})

Communicating the explanation to engineers who supply rough drafts may not be easy; because their mind is already made up, it may be difficult to get them to listen to the explanation or to read it. The editor must not be surprised if the author defends his own method and tries to justify it by saying, "That's the way *we* write it; our reader will understand it."

Two styles are in use — each by leading publishers. Scientists and engineers will have to live with them. An editor should learn which style is preferred for his company's publications and then be consistent; he must make certain that the sign of the exponent is consistent with the preferred style.

Although the style to use is optional, the editor, in recommending his choice, must realize that the second style can be used only with data involving units. That is, if a graph involves a dimensionless quantity (Reynolds number, for example) only the first style can be used, since there are no units with which to associate 10^{x}. Likewise, if data are being

presented without specifying units, the style is inherently the first. For example, a column in a table to show modulus of elasticity may use the heading *E and* 10^x. In this case, for tantalum having a modulus of 27,000,000 the table becomes

	E x 10^{-6}
Tantalum	27.0

Here the units are understood to be pounds per square inch.

The first style does have the advantage that it can be used for all graphs and tables.

Barclay E. Tucker
Bel Air, Maryland

Editor's Note — We asked Jerry Kelly, a technical writer with Avco/Crosley to read this letter. Here is his comment:

"My thanks to Barclay Tucker for clarifying a most recent persistent problem. Although either style may be used, I prefer the 10^x legend since this is the style taught at my university, the West Virginia Institute of Technology."

To Editor, *STWE Review*:

The purpose of this letter is to invite comment on the need for a separate publishing group in STWE to publish proceedings, papers presented to chapters, monographs, and other writings not suitable for publication in the *STWE Review* because of their length.

Should such an effort be thought desirable, financing would be a major problem. I understand that the treasury of the national STWE organization could not subsidize such a venture. The only financing method apparent to me would be subscription by the STWE members and other interested persons and organizations.

As to what the costs would be, I made a cost estimate recently for a 200-copy 150-page typewritten report. Typing and reproduction on a Multilith-type press were assumed to be farmed out to paid professionals, while proofreading, collating, binding, and mailing were assumed to be done by volunteers. The estimated cost was $350. (Of course, cost per page would decrease for a longer run or longer document.)

If we are professionals, then by definition we must believe that there is much to be learned in our profession, that we are capable of acquiring new knowledge, and certainly that we must publish. I believe that there is much work that will or should be done in our field that cannot be described in 2500 words, which is the limit for articles in the *STWE Review*.

John W. Simmons
Hamilton, Ohio

To Editor, *STWE Review*:

Of course I was gratified to discover on page 3 of the January *STWE Review* a quotation, with commendatory comments, from my book *Technical Reporting*. But closer inspection revealed that although the passage was enclosed in quotation marks, it was by no means a verbatim quotation, but a condensed paraphrase.

I bring this matter to your attention not so much because I am disturbed by any violence done to my priceless prose, but rather because I am distressed to see so basic a rule violated by a journal that is dedicated to better writing. I have no serious objection to the paraphrase; but surely the quotation marks should have been omitted and the relative *that* should have been inserted between *He says* and the "quoted" passage.

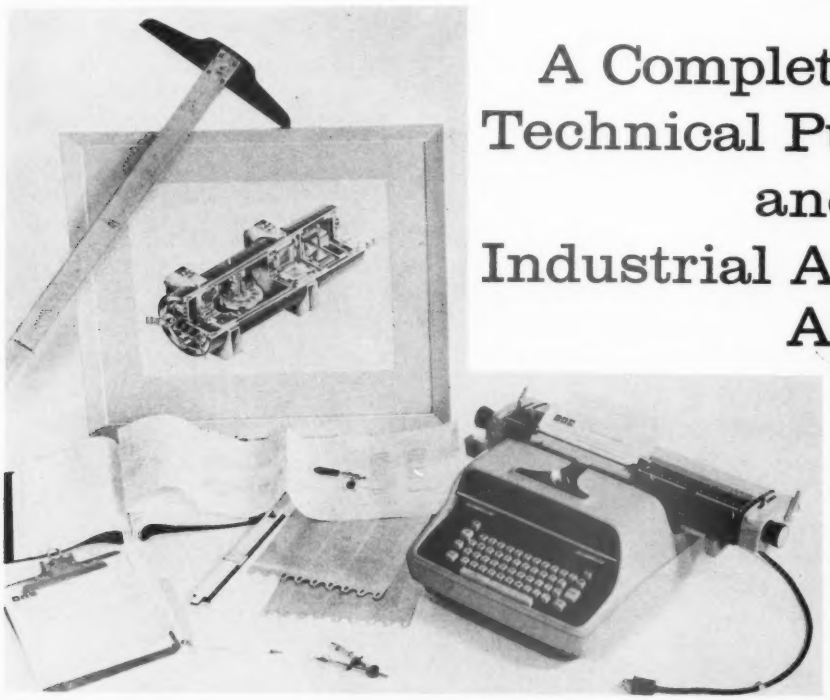
Joseph N. Ulman Jr.
Wepawang Road
Woodbridge 15, Conn.

Editor's Note —

We deeply regret the error.

We assumed that the author of the article had made a verbatim quotation.

Thank you for calling this to our attention.



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